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ABSTRACT

This curriculum guide was developed to help teachers in Texas provide training in occupational-related agricultural education to persons both in groups and on the job. The guide is organized in 33 sections. The first section covers group instruction with the remaining sections covering the following occupational titles: farm equipment operator; agricultural construction and maintenance employee; soil management employee; irrigation equipment sales and service; dairy farm worker, ranch employee; poultry farm worker; meat processing plant employee; veterinary assistant; agricultural chemicals sales and service employee; horticultural occupations; wildlife conservation employee; and poultry processing plant employee. Each section consists of an introduction and a list of essential elements, a curriculum outline listing units and topics of instruction, and a supplementary list of references. (KC)

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# CURRICULUM GUIDE
# FOR
# AGRIBUSINESS 501
# AGRICULTURAL COOPERATIVE TRAINING

## PREFACE

Agricultural Cooperative Training (ACT) is an agribusiness course in Agricultural Science and Technology. The course is designed to provide training to students in specific agribusiness occupations.

The student in ACT is at least 16 years of age and either a junior or senior in high school.

The student receives occupational and related training by alternating group and individual instruction in school with work experiences in a specific agricultural occupation at an approved training station.

The training station is an agribusiness in the community that cooperates with the local school by providing job experiences to the student. These job experiences develop skills necessary for the student to become a competent employee.

The student's instruction and work experiences are planned and supervised cooperatively by the agribusiness teacher and employer.

In accordance with TAC 75.214(b), school districts identify cooperative program units as either two-credit or three-credit units. The student enrolled in ACT earns a minimum of two (or three) credits per school year. Furthermore, all students enrolled in the same cooperative program unit are eligible to receive the same number of credits.

The student enrolled in a three-credit unit must be employed at the training station for a minimum of 15 hours per week, and 10 of these hours must be during the five-day school week. The student enrolled in a two-credit unit must be employed at the training station for a minimum of 10 hours per school week.

The student spends one hour at school each day of the school week to receive group and/or individual instruction in the occupation.

## ACKNOWLEDGEMENTS

This curriculum guide was developed by Instructional Materials Service curriculum specialists - Joe Dettling, Larry Ermis, Joe Muller, and Keith Zamzow.

A sincere expression of appreciation is extended to Johnnie Green and Vickie Marriott, IMS secretaries, for formatting and editing the material in this curriculum guide.

Neil Overstreet
Associate Professor and Coordinator
Instructional Materials Service
Texas A&M University

## USING THE CURRICULUM GUIDE

This curriculum guide is a means for directing group and individual instruction in Agricultural Cooperative Training (ACT).

The guide is divided into thirty-three sections. The first section covers group instruction with the remaining sections covering various occupational titles.

All sections in the guide have three common provisions. First is an introduction and a list of essential elements. The second is a curriculum outline with units and topics of instruction. Finally, a supplementary list of references is provided.

The list of essential elements after the introduction in each section is the legend for the coding of the essential elements in the curriculum outline. The essential elements must be met to obtain full benefit of the ACT course.

The curriculum outline serves as a guide itself. It provides the information that enables the student to become knowledgeable and trained in the occupation. The outline does not imply a time sequence for performing a skill. In fact, the time at which the student covers any topic will be determined by the job setting, season of the year, number of years the student will be in ACT, etc. Topics may be added to meet the student's individual instructional needs. Other topics may be deleted if they are not applicable to the student's needs.

The list of references enables the student to obtain information about a topic. If not already available in the agriculture department at the school, the agribusiness teacher should make these and/or other references available to the student from various sources. Information from these references, including on-the-job training, will meet the requirements of the essential elements.

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## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING

## GROUP INSTRUCTION

Training as employees/workers in various occupational areas is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at approved training stations. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the group instruction curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing group instruction that will meet the essential elements common to all agricultural science and technology courses. The essential elements and the units and topics for individualized instruction in specific occupations are located elsewhere in this curriculum guide.

## ESSENTIAL ELEMENTS COMMON TO ALL AGRICULTURAL SCIENCE AND TECHNOLOGY COURSES

$S_S$75.82 Agricultural Science and Technology

(a) The elements in this subsection are common to all agricultural science and technology courses unless otherwise indicated and shall be included in each course at the appropriate level. Every school offering agricultural science and technology shall provide courses which include the following essential elements:

(1) Leadership concepts and skills. The student shall be provided opportunities to:

(A) demonstrate skills, characteristics and responsibilities of leaders and effective group members;

(B) demonstrate a knowledge of parliamentary procedure principles;

(C) plan and conduct leadership activities; and

(D) prepare for effective citizenship and participation in our democratic society.

(2) Concepts and skills related to successful employment and/or postsecondary training. The student shall be provided opportunities to:

(A) identify employment opportunities and preparation requirements in chosen field;

(B) identify effective methods to secure and terminate employment;

(C) demonstrate effective communication skills, both oral and written, and follow through on assigned tasks;

(D) demonstrate dependability and punctuality;

(E) demonstrate productive work habits and attitudes;

(F) understand the importance of taking pride in the quality of work performed;

(G) recognize the dignity in work;

(H) develop skills in planning and organizing work;

(I) apply required methods and sequences when performing tasks;

(J) apply principles of time management and work simplification when performing assigned tasks;

(K) identify ethical practices and responsibilities; and

(L) understand the importance of the application of organizational policies and procedures.

(3) Concepts and skills associated with entrepreneurship. The student shall be provided opportunities to:

(A) identify opportunities for business ownership;

(B) understand the risk and profit motive factor;

(C) understand the elements and advantages of the free enterprise system; and

(D) explain the role of small business in the free enterprise system.

(4) Concepts and skills related to safety and safe working conditions. The student shall be provided opportunities to identify and apply safe working practices to all training situations.

(5) Concepts and skills associated with human relations and personality development. The student shall be provided opportunities to:

(A) understand the importance of maintaining good health and proper appearance for effective job performance;

(B) understand oneself and others;

(C) exercise self-control;

(D) accept and use criticism;

(E) recognize basic human relationships as they relate to business success; and

(F) demonstrate characteristics for successful working relationships.

(6) Concepts and skills related to personal and business management. The student shall be provided opportunities to:

(A) explain how management assists in reaching personal and family goals;

(B) explain the management process;

(C) describe the role of management in controlling stress;

(D) identify and understand personal checking accounts;

(E) identify and understand personal loan application processes;

(F) identify and understand different financial institutions;

(G) identify the role and functions of business management;

(H) understand the lines of authority; and

(I) identify effective supervisory techniques.

(7) Concepts and skills related to supervised agricultural activities. The student shall be provided opportunities to plan and conduct/perform supervised agricultural activities.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## GRJUP INSTRUCTION

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Introduce Agricultural Cooperative Training (ACT)** | | |
| 1. Course Purposes, Description, and Training Objectives | (2)(A),(6)(A-I) | 9007 |
| 2. Approved Occupations | (2)(A),(6)(A-I) | 9007 |
| 3. Criteria for Selecting Training Stations | (2)(A),(6)(A-I) | 9007 |
| 4. Student Placement | (2)(A),(6)(A-I) | 9007 |
| 5. Employer-Employee Agreements | (2)(A),(6)(A-I) | 9007 |
| 6. The Advisory Council and the Local Economy | (2)(A),(6)(A-I) | 9007,9027,9028 A-6 References |
| 7. Instructional Materials | (2)(A),(6)(A-I) | 9007 |
| 8. Teacher Visits to Training Stations | (2)(A),(6)(A-I) | 9007 |
| 9. Labor Laws and Occupational Safety and Health Act | (2)(A),(4),(6)(A-I) | 9007,A-9 References |
| 10. Student Evaluation | (2)(A),(6)(A-I) | 9007,9045-A thru F |
| **B. Secure Occupational Information About Agriculture and Agribusiness** | | |
| 1. Employment Opportunities in Agriculture/Agribusiness | (2)(A),(3)(A-D) | 10,2901,1050,2902 8369-F,8370-H,8501,8516 9025,9029,9578-9583 B-1 References |
| 2. Determining Occupational Interests | (2)(A),(3)(A-D) | 10,2901,1050,2902 8501,9868,B-2 References |
| 3. Assessing Personal Qualities for Training and Employment | (2)(A-L),(3)(A-D) (5)(A-E) | 10,2901,1050,2902 8501,9795 |
| 4. Occupational Requirements | (2)(A-L),(3)(A-D) (5)(A-E) | 10,2901,1050,2902 8501,9025,9029 B-4 References |
| 5. Choosing an Occupation | (2)(A),(3)(A-D) | 10,2901,1050,2902 8501,9025,9029 B-5 References |
| 6. Written Applications | (2)(A,C) | 10,2901,1050,2902 8501,8738-D |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **B. Secure Occupational Information About Agriculture and Agribusiness - Continued** | | |
| 7. Resumes and Personal Interviews | (2)(A,C) | 10,2901,1050,2902 8501,8739-A 9794,9865-9867,9884 |
| 8. Evaluating Job Applicants | (2)(A-L),(5)(A-E) | 10,2901,1050,2902 8501,8740-A & B B-8 References |
| 9. Employee-Employee Relations and Employee-Employer Relations | (2)(C-L),(5)(A-E) | 10,2901,1050,2902 8501,8716-B,8739-B thru D 8740-D & E,9007 |
| 10. Employee Benefits and Payroll Information | (6)(A-G) | 10,2901,1050,2902 8501,8716-A |
| 11. Keeping a Job | (2)(B-L),(5)(A-E) (6)(A-C) | 10,2901,1050,2902 8501,8739-B,8740-C & D B-11 References |
| **C. Prepare Reports for Agricultural Cooperative Training (ACT)** | | |
| 1. Agricultural Cooperative Training (ACT) Plans | (6)(B,I) | 9007 |
| 2. Student Evaluation Forms | (6)(B,I) | 9007 |
| 3. Final Report of Training | (6)(B,I) | 9007 |
| 4. Occupational Record of Student After Leaving School | (6)(B,I) | 9007 |
| **D. Develop Agricultural Leadership** | | |
| 1. The FFA Organization | (1)(A-D)(2,C) (6)(A) | 10,2901,8003 4850-4860,8737-A & B 9618-9619,9615-9617 9763-9768,9790,9885,9886 D-1 References |
| 2. Parliamentary Procedure | (1)(A-D)(2,C) (6)(A) | 10,2901,8004 8004a,4850-4860 9518,9751,9752,9588,9790 D-2 References |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## GROUP INSTRUCTION

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Develop Agricultural Leadership - Continued** | | |
| 3. Community and Civic Organizations | (1)(A-D),(2)(C)<br>(6)(A) | 10,2901<br>8742-A thru C,9790<br>D-3 References |
| 4. Agricultural Demonstrations, Workshops, Career Days, Field Days, Exhibitions, Fairs, Contests, etc. | (1)(A-D),(2)(C)<br>(6)(A) | 10,2901<br>419,9022,9790 |
| 5. FFA Degrees, Awards, and Scholarships | (1)(A-D),(2)(C)<br>(6)(A) | 10,2901<br>9790,9050-9070 |
| **E. Recognize Areas for Personal Improvement** | | |
| 1. Personal Appearance and Good Grooming | (2)(C-L),(5)(A-E) | 10,2901,8501,8736-C |
| 2. Health and Physical Hygiene | (2)(C-L),(5)(A-E) | 10,2901,8501 |
| 3. Personality Development | (2)(C-L),(5)(A-E) | 10,2901,8501<br>8742-E,9645-9648 |
| 4. Good Manners | (2)(C-L),(5)(A-E) | 10,2901,8501 |
| 5. Conversing and Making Friends | (2)(C-L),(5)(A-E) | 10,2901,8501<br>8741-A thru J |
| 6. Human Behavior and Social Relations | (2)(C-L),(5)(A-E) | 10,2901,8501,8736-B |
| 7. Attitudes and Honesty | (2)(C-L),(5)(A-E) | 10,2901,8501 |
| 8. Leisure Time | (2)(C-L),(5)(A-E) | 10,2901,8501<br>8742-F,E-8 References |
| 9. Education and Self-Improvement (Studying; Reading, Voice, and Speech Improvement; Gaining Confidence; Logical Thinking; and Problem-Solving) | (2)(C-L),(5)(A-E) | 10,2901,8501,8736-A<br>8738-A thru C,8742-D<br>9670-9677,E-9 References |
| 10. Educational and Training Needs | (2)(C-L),(5)(A-E)<br>(6)(A-I) | 10,2901<br>8501,E-10 References |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **F. Develop Agriculture/Agribusiness Management Skills** | | |
| 1. Agricultural Finance (Capital Resources, Banking Procedures, Sources of Credit, Interest Rates, Credit Instruments, Principles of Borrowing, Investing, and Income and Financial Statements) | (3)(A-D)<br>(6)(D-F) | 10,2901,8501<br>8708-B thru D,8709-B thru H<br>8710-A thru E,9146-9148<br>F-1 References |
| 2. Agricultural Sales and Services (Fundamentals for Successful Selling, Meeting Customers, Presenting Supplies and Services, Overcoming Sales Resistance, Closing the Sale, Telephone Courtesy, and Evaluating the Sales Representative) | (3)(A-D) | 10,2901<br>4776,F-2 References |
| 3. Agricultural Business Principles (Proprietorships and Partnerships, Corporations, Cooperatives, Financial Control, Consumer Credit, and Governmental Influences) | (3)(A-D)<br>(6)(A-C) | 10,2901<br>F-3 References |
| 4. Agricultural Business Recordkeeping Procedures (Business Form Reporting, Merchandise Planning, Purchasing, Receiving, Storing, Stocking, Invoicing, and Inventorying) | (3)(A-D)<br>(6)(G) | 10,2901<br>4771-4775,9210<br>F-4 References |
| 5. Insurance (Texas Worker's Compensation Insurance, Life and Hospitalization Insurance, Crop and Livestock Insurance, Vehicle Insurance, Building/Fire/Windstorm Damage Liability Insurance, and Title Policies) | (3)(A-D) | 10,2901,8501<br>8712-B,F-5 References |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **F. Develop Agriculture/Agribusiness Management Skills - Continued** | | |
| 6. Federal Income Tax Returns (Recordkeeping, Preparing Inventories, Using Depreciation Schedules, Calculating Social Security, and Preparing Federal Tax Returns) | (3)(A-D)<br>(6)(G) | 10,2901,8501<br>8709-G & I,F-6 References |
| 7. Estate Planning (Estate Planning Inventory, Preparing a Will, Texas Laws on Descent and Distribution, Community and Separate Property, Charitable Gifts, Federal and State Inheritance Taxes, and Trusts) | (3)(A-D),(6)(A,G) | 10,2901,F-7 References |
| 8. Real Estate (Principles, Brokerage, Sales, Licensing, Zoning, etc.) | (3)(A-D),(6)(G) | 10,2901,F-8 References |
| **G. Practice Safety** | | |
| 1. Personal Safety on the Job | (4) | 10,2901,8411,8600<br>8696-A & B,8790,9212<br>G-1 References |
| 2. First-Aid Administration | (4) | 10,2901 |
| **H. Manage a Supervised Agricultural Experience Program (SAEP)** | | |
| 1. The Individual SAEP | (7) | SAEP-E,SAEP-G<br>8001,8002-A & B<br>8002-C & D,8502 |
| 2. Record Book for Agricultural Cooperative Training (ACT) | (6)(G),(7) | SAEP-E,SAEP-G<br>8001,8002-A & B<br>8002-C & D,8502 |
| 3. SAEP Analysis | (6)(A-I),(7) | SAEP-E,SAEP-G<br>8001,8002-A & B<br>8002-C & D,8502<br>9160-9163,9209<br>H-3 References |

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L-2244, "Developing Your Local Economy: Business Incubators," TAEX
L-2245, "Understanding Your Local Economy: Focus on Agriculture," TAEX
L-2246, "Developing Your Local Economy: Focus on Agriculture," TAEX
L-2257, "Developing Your Local Economy: Consumer Opinion Survey Using Consumer Panels," TAEX
L-2275, "Understanding Your Local Economy: Estimating Community Income Multipliers," TAEX
L-2331, "Understanding Your Local Economy: Agricultural Economic Activity in Texas Counties," TAEX
L-2332, "Understanding Your Local Economy: Commuting Dollar Flows in Texas Counties," TAEX

A-9 References:

B-1250, "Texas Farm Labor Handbook," TAEX
L-1088, "Hiring and Breaking in an Employee," TAEX

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B-1599, "The World of Work: Preparation for Employment," TAEX
L-1141, "Maintaining a Productive Work Force," TAEX
L-1371, "Organizing for Productive Use of Manpower," TAEX

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L-1893, "Expense for Hired Help," TAEX

B-11 References:

L-2276, "The World of Work: Managing Your Job," TAEX

D-1 References:

Official FFA Manual, National FFA Supply Service, Alexandria, VA.

D-2 References:

B-1600, "Effective Meetings for County Officials: Using Parliamentary Procedure and Other Procedures," TAEX

D-3 References:

MP-0625, "Community Progress Through Organized Action," TAEX

E-8 References:

L-2054, "Daily Time Log," TAEX

E-9 References:

L-1246, "Communication Down, Up, Across," TAEX

E-10 References:

L-2030, "Stress on the Farm: Skills for Stress Management," TAEX
L-2031, "Stress on the Farm: Team of Experts," TAEX
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L-2033, "Stress on the Farm: Exercise for the Health of It," TAEX

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B-1523, "Annual Operating Budget and Credit Plan," TAEX
L-0815, "Where to Get Credit," TAEX
L-0912, "Managing Credit for Agribusiness," TAEX
L-1091, "Investment Analysis - Capital Budgeting Methods," TAEX
L-1092, "Investment Analysis - Partial Budget Method," TAEX
L-1124, "Building Strong Relations with Your Bank," TAEX
L-1129, "Management Measuring Rod," TAEX
L-1469, "The ABCs of Using Cash Contracts," TAEX
L-1881, "Understanding Credit Costs," TAEX
L-1882, "Deciding When to Use Credit," TAEX
L-1883, "When You Apply for Credit," TAEX
L-1884, "What is Credit?," TAEX
L-1886, "Borrowing Money," TAEX
L-1887, "Handling Credit Problems," TAEX
L-1891, "Operating Income," TAEX
L-1892, "Operating Expense," TAEX
L-1894, "Notes and Accounts," TAEX
L-1897a, "Cash Flow Summary," TAEX
L-2006, "Net Worth Statement," TAEX
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L-1824, "Microcomputers for Farm and Ranch," TAEX
L-1895, "Capital Item Purchases and Sales," TAEX
L-1898, "Inventory," TAEX
L-2106, "How to Shop for a Home Computer," TAEX
L-2186, "Microcomputer Software for Farmers and Ranchers," TAEX
Hamilton, W.H. et al. Agribusiness: An Entrepreneurial Approach, Delmar Publishers, Inc.: Albany, NY.
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

ADDITIONAL REFERENCES - Continued

F-5 References:

L-1380, "Farmer's Liability for Acts and Injuries to Employees," TAEX
Hamilton, W.H. et al. Agribusiness: An Entrepreneurial Approach, Delmar Publishers, Inc.: Albany, NY.
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

F-6 References:

L-1878, "The Financial Record Book for the Agricultural Producer (complete)," TAEX
L-1878a, "The Financial Record Book for the Agricultural Producer (insert pages)," TAEX
L-1878b, "Introduction to the Financial Record Book for the Agricultural Producer," TAEX
L-1897b, "Monthly Summary," TAEX
L-1899, "Field and Production Record," TAEX
L-2005, "Depreciation Schedule," TAEX
MP-1304, "Financial Record Book," TAEX
Hamilton, W.H. et al. Agribusiness: An Entrepreneurial Approach, Delmar Publishers, Inc.: Albany, NY.
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

F-7 References:

Looney, J.W. Estate Planning for Farmers, Doane Agricultural Service, Inc.: St. Louis, MO.
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

ADDITIONAL REFERENCES - Continued

F-8 References:

Hamilton, W.H. et al. Agribusiness: An Entrepreneurial Approach, Delmar Publishers, Inc.: Albany, NY.
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

G-1 References:

B-1272, "Clothes That Care: Flame Resistant Protection," TAEX
L-0427, "! Cuidado con los Venenos ! (Safety First with Insecticides)," TAEX
L-1026, "Use Pesticides Safely," TAEX
L-1135, "Exposicion a Pesticides ... Medidas Protectoras (Protective Measures for Pesticide Exposure)," TAEX
L-1167, "Pesticide Exposure - Protective Measures," TAEX
L-2039, "Poison Perils Checklist," TAEX
L-2087, "Texas Poison Control Centers," TAEX
L-2120, "Home Fire Detectors Save Lives," TAEX
L-2130, "Agricultural Hand Signals," TAEX
L-2131, "Minimum Farm Tractor and Machinery Safety Rules," TAEX
MP-0437, "Safe Use of Chemicals in Agriculture," TAEX
MP-1289, "Using Pesticides: Private Applicator Manual," TAEX

H-3 References:

L-2008, "Enterprise Summary," TAEX
L-2260, "Considerations in Enterprise Diversification," TAEX

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630204 - AGRICULTURAL MACHINERY REPAIRER

Training as an Agricultural Machinery Repairer is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural machinery repair training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural machinery repairer curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize importance of the machinery industry to American agriculture;
(2) understand safe use of tools and equipment;
(3) set up and use primary tillage equipment;
(4) set up and use secondary tillage equipment;
(5) set up and use planting equipment;
(6) set up and use cultivation and weed control equipment;
(7) set up and use fertilizer and chemical equipment;
(8) set up and use harvesting equipment; and
(9) set up and use special equipment.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630204 - AGRICULTURAL MACHINERY REPAIRER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Importance of Agricultural Mechanics to American Agriculture | (1) | 8410,8220-A |
| 2. Understanding and Applying Safe Work Practices and Lab Management | (2) | 8600,8780-B,8790 |
| 3. Safe Use of Hand and Power Tools and Equipment | (2) | 8791-A,8791-B |
| **B. Mechanical Practices and Procedures** | | |
| 1. Use of Bearings and Seals | (2-9) | 8202-A |
| 2. Use of Gaskets, Sealants, Adhesives, and Tubings | (2-9) | 8202-B |
| 3. Selecting and Using Fasteners | (2-9) | 8792-C |
| 4. Service of Tires and Wheels | (2-9) | 8206-B,8794-A |
| 5. Cleaning and Painting of Agricultural Tractors and Equipment | (2-9) | 8224-A |
| 6. Basic Use of Oxyfuel and Arc Welding Equipment | (2-9) | 8609-A,8609-B 8609-C,8609-D |
| **C. Principles of Operation and Maintenance of Agricultural Equipment Component Parts and Systems** | | |
| 1. Identification and Maintenance of Component Materials | (2-9) | 8792-B |
| 2. Operation and Service of Electrical Accessory Systems | (2-9) | 8209-D,8211-A,8231-A |
| 3. Operation and Service of Power Trains | (2-9) | 8204-A |
| 4. Operation and Service of Hydraulic Systems | (2-9) | 8205-A,8796 |
| **D. Operation, Assembly, Maintenance, and Repair of Agricultural Machinery and Equipment** | | |
| 1. Adjust, Maintain, Calibrate, and Operate Equipment | (2,9) | 8201-B,8792-E |
| 2. Select and Operate Tractors | (2,9) | 8201-A,8794-A |
| 3. Tillage Practices: Conventional, Minimum, and No-Till | (2-9) | 8860-A |
| 4. Mechanical Techniques of Harvesting Crops | (2,8,9) | 8641-B |
| 5. Repair and Reconditioning of Agricultural Equipment | (2-9) | 8212-A |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4533) Fundamentals of Service - Mowing and Spraying Equipment. Deere and Co., Moline, IL.
(IMS# 4597) Fundamentals of Machine Operation - Agricultural Machinery Safety. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
(IMS# 4612) Fundamentals of Service - Identification of Part Failures. Deere and Co., Moline, IL.
Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.
Phipps and Reynolds, Mechanics in Agriculture. (Current Edition), Interstate Publishing, Danville, IL.
Promersberger and Others, Modern Farm Power. (Current Edition), Reston Publishing Reston, VA.
Safe Tractor Operation and Daily Care. AAVIM, Athens, GA.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

**(TAEX #s):**

L-2047 "Gear Selection and Engine Speed"
L-2048 "Choosing Equipment Size for Efficient Energy Use"
L-2049 "Radial Tractor Tires"
L-2050 "Tractor Wheel Slip Ballasting"
MP-1238 "Accurate Bulk Fertilizer Spreading with Spinner Applicators"

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630205 - FARM EQUIPMENT OPERATOR

Training as a Farm Equipment Operator is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved farm equipment operator training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the farm equipment operator curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand safe operation, adjustment, and maintenance of farm tractors and equipment;
(2) understand the driving and control of tractors and equipment units;
(3) understand the storing of equipment and tractors out of the weather;
(4) understand the tillage of the soil;
(5) plant, cultivate, and harvest crops; and
(6) recognize other tasks not related to tractor and equipment operation, e.g., cleaning, etc.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630205 - FARM EQUIPMENT OPERATOR

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safe Work Practices in Agriculture** | | |
| 1. Principles and Application of Safe Work Practices | (1,6) | 8600,8780-B,8790 |
| 2. Safe Use of Hand and Power Tools, and Supplies | (1,6) | 8791-A,8792-C |
| **B. Operation of Agricultural Tractors and Equipment** | | |
| 1. Identification and Selection of Tractors and Equipment | (1,2) | 8201-C,8792-A,8792-B |
| 2. Safe Agricultural Tractor and Equipment Operation | (1,2) | 8201-A,8211-A,8792-E,8794-A |
| **C. Maintenance and Adjustment of Agricultural Tractors and Equipment** | | |
| 1. General Daily Maintenance of Agricultural Tractors and Equipment | (1,3) | 8201-B |
| 2. Adjustment and Calibration of Agricultural Tractors and Equipment | (1,3) | 8792-E |
| 3. Selection of Lubricants for Engines and Power Trains | (1,3) | 8204-A,8207-A |
| 4. Service and Maintenance of Agricultural Tractor and Equipment Systems | (1,3) | 8206-A,8206-B,8794-B,8794-D 8794-E,8794-F,8794-G,8794-H 8794-I,8796 |
| **D. Principles of the Soil Tillage** | | |
| 1. Fundamentals of Soil Use, Fertilization, and Management | (4,5) | 8234-B,8634-B |
| 2. Tillage Practices: Conventional, Minimum, and No-Till | (4,5) | 8860-A |
| 3. Safe Use and Application of Agricultural Chemicals | (4,5) | 8640-C,8860-B |
| **E. Crop Planting, Cultivating, and Harvesting Procedures** | | |
| 1. Mechanical Techniques of Planting and Cultivating Crops | (5) | 8860-A |
| 2. Mechanical Techniques of Plant Management: Harvest and Post-Harvest Practices for Crops | (5) | 8641-B |
| **F. Agricultural Equipment Cleaning, Repair, and Storage Procedures** | | |
| 1. Importance of Proper Storage and Repair | (3,6) | 8201-B,8221-A |
| 2. Cleaning and Painting of Agricultural Equipment | (3,6) | 8224-A |
| 3. Repair and Reconditioning of Agricultural Equipment | (3,6) | 8201-B,8212-A |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4533) Fundamentals of Service - Mowing and Spraying Equipment. Deere and Co., Moline, IL.
(IMS# 4597) Fundamentals of Machine Operation - Agricultural Machinery Safety. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
(IMS# 4622) Conservation Farming. Deere and Co., Moline, IL.
Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.
Safe Tractor Operation and Daily Care. AAVIM, Athens, GA.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

**(TAEX #s):**

L-2047 "Gear Selection and Engine Speed"
L-2048 "Choosing Equipment Size for Efficient Energy Use"
L-2049 "Radial Tractor Tires"
L-2050 "Tractor Wheel Slip Ballasting"
L-2051 "On-Farm Fuel Storage"
MP-1238 "Accurate Bulk Fertilizer Spreading with Spinner Applicators"

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630206 - AGRICULTURAL MACHINERY SET UP AND DELIVERER

Training as an Agricultural Machinery Set Up and Deliverer is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved training station for an agricultural machinery set up and delivery employee. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural machinery set up and deliverer curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) realize the importance of agricultural machinery to American agriculture;
(2) understand safe use of tools and equipment;
(3) recognize various types of agricultural machinery and their component parts;
(4) identify safe operation procedures of agricultural machinery;
(5) read and understand plans and schematic diagrams;
(6) perform pre-delivery inspection, set up, adjustment, repair, reconditioning, and preventative maintenance of agricultural machinery;
(7) assemble agricultural equipment;
(8) recognize and practice safe loading and unloading practices and driving procedures; and
(9) develop and practice positive customer relationships.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630206 - AGRICULTURAL MACHINERY SET UP AND DELIVERER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Importance of Agricultural Mechanics to American Agriculture | (1) | 8220-A |
| 2. Understanding and Applying Safe Work Practices and Lab Management | (2) | 8600,8790 |
| 3. Safe Use of Hand and Power Tools and Equipment | (2) | 8791-A,8791-B |
| 4. Basic Use of Oxyfuel and Arc Welding Equipment in Repair and Reconditioning of Agricultural Machinery | (2) | 8209-A,8209-B,8209-C,8209-D 8782-B,8785-B |
| **B. Identification and Operation of Component Parts of Agricultural Machinery** | | |
| 1. Identify and Select Machines and Equipment | (2,3,4) | 8221-A,8792-A |
| 2. Identify and Maintain Component Materials | (2,3,4) | 8792-B |
| 3. Identify, Select, and Use of Fasteners | (2,3,4) | 8792-C |
| 4. Use of Bearings and Seals | (2-7) | 8202-A |
| 5. Use of Gaskets, Sealants, Adhesives, and Tubings | (2-7) | 8202-B |
| 6. Service of Tires and Wheels | (2-7) | 8206-B |
| 7. Selection of Lubricants for Engines and Power Trains | (2-7) | 8204-A,8207-A |
| **C. Assembly, Maintenance, Adjustment, Repair, and Delivery of Agricultural Machinery** | | |
| 1. Assembly, Adjustment, Calibration, and Operation of Agricultural Tractors and Machinery | (2-7) | Reference #1,8201-A,8792-E |
| 2. Service and Maintenance of Agricultural Tractor and Equipment Systems | (2-7) | 8206-A,8206-B,8201-B,8794-D 8794-I,8208-D,8204-A 8205-A,8209-D |
| 3. Repair, Recondition, and Repair of Used Agricultural Machinery | (2-7) | 8224-A,8212-A |
| 4. Loading, Unloading, and Delivery of Agricultural Machinery | (2,3,4,8) | 4597,Reference #2 & #3 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630206 - AGRICULTURAL MACHINERY SET UP AND DELIVERER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Develop Desirable Working Skills** | | |
| 1. The Communication Process | (9) | 8741-A |
| 2. Listening | (9) | 8741-F |
| 3. Decision Making | (9) | 8742-C |
| 4. Problem-Solving | (9) | 8742-D |
| 5. Assessing Personal Business Skills | (9) | 8756-A |

REFERENCES

Reference #1 Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.
Reference #2 Texas Driver's Handbook, Texas Department of Public Safety, (Obtain from local Driver's License Office.)
Reference #3 Texas Traffic Laws, Texas Department of Public Safety, (Obtain from local Driver's License Office.)

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
Safe Tractor Operation and Daily Care. AAVIM, Athens, GA.
Appropriate Operator's Manuals and/or Assembly and Delivery Manuals (Obtain from various local agricultural machinery dealerships).

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

(TAEX #s):

| | |
|---|---|
| L-2047 | "Gear Selection and Engine Speed" |
| L-2048 | "Choosing Equipment Size for Efficient Energy Use" |
| L-2049 | "Radial Tractor Tires" |
| L-2050 | "Tractor Wheel Slip Ballasting" |
| MP-1238 | "Accurate Bulk Fertilizer Spreading with Spinner Applicators" |

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630207 - AGRICULTURAL ELECTRIFICATION, POWER AND CONTROLS EMPLOYEE

Training as an Agricultural Electrification, Power and Controls Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved training station for an agricultural electrification, power and controls employee. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural electrification, power and controls employee curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand the importance of electricity, power and controls to American agriculture;
(2) practice safety precautions when dealing with electricity;
(3) develop a knowledge of basic electrical circuits;
(4) understand the importance of conductors and semiconductors;
(5) use testing tools and equipment to measure current, voltage, and resistance;
(6) install, service, and maintain electrical systems;
(7) identify and perform basic electric wiring skills;
(8) understand the importance and function of electric motors and controls for electric motors;
(9) select and install electric motors, controls, and equipment for agricultural application;
(10) perform routine maintenance and troubleshooting of electric motors, controls, and equipment;
(11) maintain a clean electrical shop and equipment; and
(12) demonstrate productive work habits and attitudes.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630207 - AGRICULTURAL ELECTRIFICATION, POWER AND CONTROLS EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Identify Major Areas of Agriculture Mechanics | (1) | 8220-A |
| 2. Agriculture Mechanics: Importance, Safety, and Lab Management | (2,11) | 8600 |
| 3. Safe Use of Hand and Power Tools and Equipment | (2,5,6) | 8108,8411,8412,8791-A |
| **B. Principles and Concepts of Electrical Circuits** | | |
| 1. Basic Principles and Terms of Electricity and Electromagnetic Induction | (2,3) | 8231-A |
| 2. Determine Electrical Needs and Plan Agricultural Structures and Electrical Circuits with Use of Local and National Electrical Codes | (2,3,4) | 8211-A,8231-B,8231-C,8605-B |
| 3. Selection of Wiring Materials and Supplies | (4,5,7,9) | 8231-B,8231-C |
| 4. Installation, Maintenance, and Repair of Electrical Circuits and Controls | (5,6,7,9) | 8231-C,8232-A |
| **C. Operation, Selection, and Maintenance of Electric Motors** | | |
| 1. Operation and Selection of Electric Motors | (8,9) | 8795 |
| 2. Maintenance and Troubleshooting of Electric Motors | (5,8,9,10) | 8232-A,8795 |
| 3. Operation and Installation of Electric Motor Protection and Control Devices | (5-9) | 8231-A,8232-A,8795 |
| **D. Development of Interpersonal Skills and Worker Relationships** | | |
| 1. Formulating Professional and Ethical Work Habits | (12) | 8372-A |
| 2. Use Proper Etiquette and Behavior | (12) | 8732-B,8732-C |
| 3. Communication and Problem-Solving Skills | (12) | 8741-A,8741-B,8741-C,8741-D,8741-E 8741-F,8742-D |
| 4. Working with Diverse Groups and Co-Workers | (12) | 8741-G,8739-D |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4512) Fundamentals of Service - Electrical Systems. Deere and Co., Moline, IL.
(IMS# 4545) Understanding Electricity and Electrical Terms. AAVIM, Athens, GA.
(IMS# 4546) Agricultural Wiring Handbook. National Food and Energy Council, Columbia, MO.
(IMS# 4547) Maintaining the Lighting and Wiring Systems. AAVIM, Athens, GA.
(IMS# 4548) Farm Electrical Lesson Plans - Wiring and Safety. IMS, College Station, TX.
(IMS# 4549) Electrical Controls and Basic Control Circuits Used in Agricultural Production.
(IMS# 4555) Electric Motors: Lesson Plans Agricultural Production. IMS, College Station, TX.
(IMS# 4556) Electrical Motors - Selection, Protection, and Drives. AAVIM, Athens, GA.
(IMS# 4610) Electrical Wiring - Residential/Utility Buildings/Service Areas. AAVIM, Athens, GA.
(IMS# 8107) Electrical Wiring - Student Handbook. AAVIM, Athens, GA.
(IMS# 4629) Cooper, Ag Mechanics - Fundamentals and Applications. (2nd Edition), Delmar Inc., Albany, NY.

The National Electrical Code Handbook. (Latest Print), National Fire Protection Association, Quincy, MA.

Surbrook and Mullin, Agricultural Electrification, South-Western Publishing Co., Dallas, TX.

**Videos:**

(IMS# 9570) "Electrical"
(IMS# 9778) "Electrical Safety in the Home or Shop"

**Software:**

(IMS# 9113) "Electrical Wiring and Principles Review," 9239 (IBM)
(IMS# 9175) "Electrical Systems" (Apple II)
(IMS# 9219) "Electrical Motors and Related Review" (Apple II)

"Computerized Instructional Wiring Program," (IBM with notebook and references.) National Food and Energy Council, Columbia, MO.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630208 - AGRICULTURAL CONSTRUCTION AND MAINTENANCE EMPLOYEE

Training as a Agricultural Construction and Maintenance Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved training station for an agricultural construction and maintenance employee. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural construction and maintenance employee curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand importance of agricultural construction and maintenance to the agricultural community;
(2) practice proper safety procedures;
(3) develop skills in using hand and power tools;
(4) practice knowledge of measuring devices;
(5) understand importance of reading blueprints;
(6) provide assistance to other workers;
(7) build forms and place concrete;
(8) practice skill of finishing concrete; and
(9) understand construction procedures.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630208 - AGRICULTURAL CONSTRUCTION AND MAINTENANCE EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Importance of Agricultural Construction and Maintenance** | (1) | 8220-A,8410 |
| **B. Safe Practices in Agricultural Construction and Maintenance** | | |
| 1. Agricultural Mechanics: Importance, Safety, and Lab Management | (2) | 8108,8600 |
| 2. Identifying Safety and Laboratory Procedures Used in Agricultural Construction and Maintenance | (2) | 8411 |
| **C. Application and Safe Use of Hand and Power Tools and Equipment Needed in Agricultural Construction** | | |
| 1. Identification and Safe Use of Hand Tools | (2,3,4) | 8412,8771 |
| 2. Identification and Safe Use of Power Tools | (2,3,4) | 8601-A |
| 3. Use of Measurement and Marking Devices | (2,3,4) | 8601-B |
| 4. Selection and Use of Wood and Metal Fasteners | (2,3,4) | 8617 |
| 5. Selection and Use of Tripod Levels | (2,3,4,9) | 8771 |
| 6. Operation and Use of Arc Welding Equipment | (2,3,9) | 8609-B,8609-C,8609-D,8783 |
| 7. Operation and Use of Oxyfuel Cutting and Welding Equipment | (2,3,9) | 8609-A |
| **D. Agricultural Structures Construction and Maintenance** | | |
| 1. Planning Agricultural Buildings and Structures | (5,9) | 8229-A,8605-B,8763 |
| 2. Selection of Building Materials and Equipment | (9) | 8229-B,8413,8605-A |
| 3. Construction and Maintenance of Agricultural Structures | (9) | 8229-C,8607,8620-B 8621-B,8622,8623,8765,8767 |
| **E. Concrete and Masonry Construction: Planning, Placing, Finishing, and Curing** | | |
| 1. Principles of Concrete and Masonry Construction | (7) | 8230-A,8230-B,8768 |
| 2. Constructing Forms, Placing, Reinforcing, Finishing, and Curing Concrete | (7,8) | 8230-B,8230-C,8768 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **F. Agricultural Structures Electrification** | | |
| 1. Electrical Principles, Terminology, and Safety | (2,9) | 8231-A,8602-A |
| 2. Planning, Installing, and Maintaining Electrical Circuits and Equipment | (2,9) | 8231-B,8231-C,8602-B |
| **G. Wood and Metal Paints and Preservatives** | | |
| 1. Cleaning and Preparing Surfaces | (9) | 8224-A,8606 |
| 2. Applying Paints and Preservatives | (9) | 8224-A,8606 |
| **H. Development of Interpersonal Skills and Worker Relationships** | | |
| 1. Communication and Problem-Solving Skills | (6) | 8741-A,8742-D |
| 2. Working with Diverse Groups and Co-Workers | (6) | 8741-G,8793-D |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4546) Agricultural Wiring Handbook. National Food and Energy Council, Columbia, MO.
(IMS# 4629) Cooper, Agricultural Mechanics: Fundamentals and Application. (2nd Edition), Delmar Inc., Albany, NY.
(IMS# 4630) Home Repair Handbook. Lane Publishing Company, Menlo Park, CA.
Phillips, Farm Buildings: From Planning to Completion. Doane-Western Inc., St. Louis, MO.
Structures and Environment Handbook - MWPS-1. Midwest Plan Service, Iowa State University, Ames, IA.

**Videos :**

(IMS# 9561) "Garages: Framing/Sheathing/Roofing/Siding/Finishing/Door Openers"
(IMS# 9566) "Hand and Power Tools"
(IMS# 9683) "Learn to Weld--The Lincoln Way"
(IMS# 9685) "Welding Safely--The Ways the Pros Do It"
(IMS# 9775) "Safety and Operation: Large Metal Power Tools"
(IMS# 9776) "A and B Safety and Operation of Large Wood Power Tools"
(IMS# 9777) "Safety and Operation: Portable Wood Power Tools"
(IMS# 9779) "Stick Metal Arc Welding"
(IMS# 9786) "Oxy-Acetylene Cutting"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630209 - AGRICULTURAL WELDING AND SERVICE

Training in Agricultural Welding and Service is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural welding and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural welding and service curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand the basic principles of oxyacetylene and arc welding;
(2) develop skills in selecting and using all forms of welding equipment, electrodes, and welding stock;
(3) observe safety practices to prevent injury from electrical shock, radiant energy, gases and fumes, and combustible materials;
(4) perform flat and out-of-position welds;
(5) understand the types of welds and weld joints;
(6) develop skills in welding uncommon metals; and hard-surfacing; and
(7) clean and organize welding shop.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630209 - AGRICULTURAL WELDING AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety and Organization in the Welding Shop** | | |
| 1. Agricultural Mechanics: Importance, Safety, and Lab Management | (1,3,7) | 8600 |
| 2. Safety Practices and Technical Skills | (1,3,7) | 8780-A,8780-C,8779 |
| **B. Oxy-Fuel Cutting and Welding** | | |
| 1. Principles and Procedures of Oxyfuel Cutting | (1,2,3) | 8609-A |
| 2. Principles and Procedures of Oxyfuel Welding, Brazing, Tempering, and Hardening | (1,2,3,6) | 8782-A,8782-B,8785-A,8785-B |
| **C. Arc Welding** | | |
| 1. Principles and Procedures of Basic Arc Welding | (1,2,3) | 8231-A,8609-B,8609-C |
| 2. Arc Welding: Joints, Positions, and Special Processes | (2,3,4,5,6) | 8609-D,8785-B |
| **D. MIG and TIG Welding: Plasma Arc Cutting** | | |
| 1. Principles and Procedures of Gas Arc Welding | (2,3,6) | 8783 |
| 2. Principles and Procedures of Plasma Arc Processes | (2,3,6) | 8784 |
| **E. Properties of Metals and Metal Fabrication Procedures** | | |
| 1. Metal Technology and Weld Quality | (2,3,5,6) | 8227-A,8786-B |
| 2. Reading Plans, Drawing, and Welding Symbols | (2,4,5,6) | 8786-A |
| 3. Cleaning and Preparing Metal Surfaces for Paints | (2,3,7) | 8224-A |
| **F. Repairing Plastics and Other Synthetic Materials** | | |
| 1. Repair and Welding of Thermoplastic Components | (2,3,6) | 8787-A |
| 2. Repair of Fiberglass Reinforced Plastic Components | (2,3,6) | 8787-B |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks/Plans:**

(IMS# 4557) Fundamentals of Service: Welding. Deere and Co., Moline, IL.
(IMS# 4596) Project Plan Book #1.
(IMS# 4621) Project Plan Book #2.
(IMS# 4629) Cooper, Ag Mechanics - Fundamentals and Applications. (2nd Edition), Delmar Inc., Albany, N.Y.
Althouse, Turnquist, and Bowditch, Modern Welding. (Current Edition), Goodheart-Willcox, South Holland, IL.
Morford, Hoerner, and Anderson, Metals and Welding. (Current Edition), Hobar Publications, St. Paul, MN.

**Videos:**

(IMS# 9683) "Learn to Weld--The Lincoln Way"
(IMS# 9684) "Why Innershield"
(IMS# 9685) "Welding Safely--The Ways the Pros Do It"
(IMS# 9686) "Prevention and Control of Distortion"
(IMS# 9779) "Stick Metal Arc Welding I"
(IMS# 9780) "Stick Metal Arc Welding II"
(IMS# 9781) "Stick Metal Arc Welding III"
(IMS# 9782) "Gas Metal Arc Welding"
(IMS# 9783) "Gas Tungsten Arc Welding"
(IMS# 9784) "Oxy-Acetylene Welding: Safety and Introduction"
(IMS# 9785) "Oxy-Acetylene Welding and Brazing"
(IMS# 9786) "Oxy-Acetylene Cutting"
(IMS# 9787) "Acetylene Cylinder Safety"

**Software:**

(IMS# 9107) "Oxy-Acetylene and Review" (Apple II), 9224 (TRS-80), 9237 (IBM)
(IMS# 9108) "Arc Welding and Review" (Apple II), 9225 (TRS-80), 9238 (IBM)
(IMS# 9211) "Measurement and Layout Tools" (Apple II)

**Slides:**

(IMS# 5516) "FOS - Welding"
(IMS# 5901) "Protective Eye Care"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630210 - AGRICULTURAL HAND AND POWER TOOLS SERVICE

Training in Agricultural Hand and Power Tools Service is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural hand and power tool service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural hand and power tools service curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) assemble and install power tools;
(2) maintain hand and power tools;
(3) wire or rewire electrical equipment;
(4) make adjustments on various power tools;
(5) inventory tools and equipment;
(6) instruct safe operating procedures;
(7) clean and maintain shop and storage facilities; and
(8) develop a knowledge of operation manuals and manufacturer's specifications.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630210 - AGRICULTURAL HAND AND POWER TOOLS SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Hand and Power Tools, Equipment, and Facilities** | | |
| 1. Agricultural Mechanics: Importance, Safety, and Lab Management | (5,6,7) | 8600,8749-A,8790 |
| 2. Safe Use of Hand and Power Tools | (2,4,5,6,8) | 8414,8412 8601-A,8601-B,8108 |
| 3. Sharpening and Reconditioning of Hand and Power Tools | (2,4,6,8) | 8626 |
| 4. Cleaning, Protecting, and Painting Tools and Equipment | (2,6,7,8) | 8224-A |
| **B. Basic Principles of Electrical and Electronic Circuits** | | |
| 1. Principles of Electricity, Electronics, Magnetism, and Electromagnetic Induction | (1-4) | 8231-A |
| 2. Electronics in Agricultural Mechanics Applications | (1-4) | 8211-A |
| 3. Planning, Installation, and Repair of Electrical Circuits | (1,2,3,4,7) | 8231-B,8231-C,8602-B,8619 |
| **C. Operation, Maintenance, Selection, and Repair of Electric Motors** | | |
| 1. Selection and Operation of Electric Motors | (2,3,7,8) | 8795 |
| 2. Maintenance and Repair of Controls and Protective Devices | (2,3,7,8) | 8232-A,8795 |
| 3. Operation and Installation of Electric Motors Protection and Control Circuits | (2,3,7,8) | 8231-A,8232-A,8795 |
| **D. Operation, Service, and Repair of Small Engines** | | |
| 1. Principles of Operation of Small Two- and Four-Cycle Engines | (1,2,4,6,8) | 8793-A |
| 2. Maintaining and Trouble Shooting Small Engines | (1,2,4,6,8) | 8793-B |
| 3. Service, Repair, and Reconditioning Small Engines | (1,2,4,6,8) | 8793-C |

## ADDITIONAL REFERENCES AND MATERIALS

Texts/Handbooks:

(IMS# 4539) Small Engine Service Manual. Intertec Publishing Corp., Overland, KS.
(IMS# 4542) Small Gas Engines: Operation, Service and Repair. Briggs and Stratton Corp., Milwaukee, WI.
(IMS# 4546) Agricultural Wiring Handbook. National Food and Energy Council, Columbia, MO.
(IMS# 4548) Farm Electrical Lesson Plans - Wiring and Safety.
(IMS# 4549) Electrical Controls and Basic Control Circuits Used in Agricultural Production.
(IMS# 4555) Electric Motors: Lesson Plans for Agricultural Production.
(IMS# 4556) Electric Motors - Selection, Protection, and Drives. AAVIM, Athens, GA.
(IMS# 4629) Cooper, Ag Mechanics - Fundamentals and Applications. (2nd Edition), Delmar Inc., Albany N.Y.

Videos:

(IMS# 9566) "Hand and Power Tools"
(IMS# 9570) "Electrical"
(IMS# 9734) "Briggs Preventive Maintenance/Small Engines"
(IMS# 9735) "Briggs World of Power/Small Engines"
(IMS# 9736) "Briggs Introduction/Troubleshooting Small Engines"
(IMS# 9737) "Briggs Service Tips/Small Theory of Operation"
(IMS# 9738) "Briggs Electrical Systems/Small Engines"
(IMS# 9775) "Safety and Operation: Large Metal Power Tools"
(IMS# 9776) "A and B Safety and Operation: Large Wood Power Tools I and II"
(IMS# 9777) "Safety and Operation: Portable Wood Power Tools"
(IMS# 9778) "Electrical Safety in the Home or Shop"

Software:

(IMS# 9109) "Small Gas Engine Review" (Apple II), 9236 (IBM)
(IMS# 9110) "Briggs and Stratton Engines Specs" (Apple II)
(IMS# 9113) "Electrical Wiring and Principles Review" (Apple), 9226 (TRS), 9239 (IBM)
(IMS# 9175) "Electrical Systems" (Apple II)
(IMS# 9219) "Electrical Motors and Related Review" (Apple II)
(IMS# 9234) "Tool Safety: Shop and Laboratory Related" (IBM)
"Computerized Instructional Wiring Program," (IBM with notebook and references), National Food and Energy Council, Columbia, MO.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630211 - AGRICULTURAL POWER MACHINERY EMPLOYEE

Training as an Agricultural Power Machinery Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural power machinery training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural power machinery employee curriculum guide recommend selected references available through the Instructional Materials Service, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand the importance of power machinery to American agriculture;
(2) safe use of tools, equipment, and agricultural power machinery;
(3) comprehend basic technical knowledge and skills involving terminology, mathematical computations, and application of the principles of operation of agricultural machinery and engines;
(4) select, operate, and maintain agricultural machines and equipment;
(5) select, operate, and maintain tractors;
(6) repair and maintain agricultural machinery systems;
(7) repair and maintain engines;
(8) recognize the importance of information found in an owner's and/or operator's manual;
(9) select, operate, and maintain electric motors; and
(10) demonstrate productive work habits and attitudes.

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Importance of Agricultural Mechanics to American Agriculture | (1) | 8220-A |
| 2. Understanding and Applying Safe Work Practices and Lab Management | (2) | 8600,8780-B,8790 |
| 3. Safe Use of Hand and Power Tools and Equipment | (2) | 8780-A,8791-A,8791-B,8792-C |
| 4. Safe Use of Oxyfuel and Arc Cutting and Welding Equipment in the Repair and Maintenance of Agricultural Equipment | (2-8) | 8782-A,8782-B,8609-A,8609-B,8609-C 8609-D |
| **B. Safe Operation of Agricultural Tractors and Equipment** | | |
| 1. Identification and Selection of Tractors and Equipment | (2-5) | 8221-A,8201-C,8792-A,8792-B |
| 2. Safe Agricultural Tractor and Equipment Operation | (2-5) | 8201-A,8211-A,8792-E |
| **C. Principles of Operation, Maintenance, and Repair of Component** | | |
| Parts and Systems of Agricultural Equipment | | |
| 1. General Daily Maintenance of Agricultural Tractors and Equipment | (2-8) | 8201-B |
| 2. Adjustment and Calibration of Agricultural Tractors and Equipment | (2-8) | 8792-E |
| 3. Use of Gaskets, Sealants, Tubing, Bearings, and Seals | (2-8) | 8202-A, 8202-B |
| 4. Principles of Operation and the Repair of Engine Component Systems | (2-8) | 8203-A to C,8206-A,8207-A 8208-A to D |
| 5. Principles of Operation and Repair of Electrical Systems | (2-8) | 8211-A,8231-A,8209-A to D |
| 6. Principles of Operation and Repair of Power Trains | (2-8) | 8204-A |
| 7. Principles of Operation and Repair of Hydraulic Systems | (2-8) | 8205-A,8796 |
| 8. Principles of Operation and Repair of Agricultural Equipment Accessory Systems | (2-8) | 8794-H,8794-I,8206-B |
| 9. Repair and Reconditioning Agricultural Equipment | (2-8) | 8787-A & B,8212-A |
| 10. Clean and Paint Agricultural Tractors and Equipment | (2-8) | 8224-A |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Operation, Selection, and Maintenance of Electric Motors** | | |
| 1. Operation and Selection of Electric Motors | (2,3,4,6,8) | 8795 |
| 2. Maintenance and Troubleshooting of Electric Motors | (2,3,4,6,8) | 8232-A,8795 |
| 3. Operation and Installation of Electric Motor Protection and Control Devices | (2,3,4,6,8) | 8231-A,8232-A,8795 |
| **E. Develop Positive Work Habits and Attitudes** | | |
| 1. Formulating Professional and Ethical Work Habits | (2,10) | 8372-A |
| 2. Use Proper Etiquette and Behavior | (2,10) | 8732-B |
| 3. Describe Employer Expectations | (2,10) | 8793-B |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4533) Fundamentals of Service - Mowing and Spraying Equipment. Deere and Co., Moline, IL.
(IMS# 4597) Fundamentals of Machine Operation - Agricultural Machinery Safety. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
(IMS# 4612) Fundamentals of Service - Identification of Part Failures. Deere and Co., Moline, IL.

Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.
Safe Tractor Operation and Daily Care. AAVIM, Athens, GA.
Appropriate Operator's Manuals and/or Technical Service Manuals (Obtain from various local agricultural machinery dealerships.)
Appropriate "I&T Shop Service Manuals." Vocational Marketing Services, Homewood, IL.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

**(TAEX #s):**

L-2047 "Gear Selection and Engine Speed"
L-2049 "Radial Tractor Tires"
L-2050 "Tractor Wheel Slip Ballasting"
L-2051 "On-Farm Fuel Storage"

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630212 - AGRICULTURAL MACHINERY MECHANICS HELPER

Training as an Agricultural Machinery Mechanics Helper is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural machinery mechanic training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural machinery mechanic helper curriculum guide recommend selected references available through the Instructional Materials Service, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize importance of the agricultural machinery industry;
(2) understand safe use of tools and equipment;
(3) understand the operation of the internal combustion engines;
(4) understand the operation of the power train;
(5) understand the operation of the steering system;
(6) understand the operation of the electrical system;
(7) understand the operation of the cooling system;
(8) understand the operation of the fuel system;
(9) understand the operation of the braking system;
(10) understand the operation of the hydraulic system;
(11) understand the uses of fuels and lubricants; and
(12) perform engine testing and tune-up.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630212 - AGRICULTURAL MACHINERY MECHANICS HELPER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Importance of Agricultural Mechanization and Application of Safe Work Practices** | | |
| 1. Importance of Agricultural Power Technology | (1) | 8220-A,8410 |
| 2. Agricultural Mechanics: Safety and Lab Management | (2) | 8600,8790 |
| 3. Identifying, Selecting, Maintaining, and Operating Tools and Equipment | (2) | 8780-A,8791-A,8792-D |
| **B. Technical Concepts, Skills, and Procedures** | | |
| 1. Identification and Proper Use of Fasteners | (2-12) | 8792-C |
| 2. Bearings and Seals: Use, Installation, and Removal | (2-12) | 8202-A |
| 3. Use of Gaskets, Sealants, Adhesives, and Tubings | (2-12) | 8202-B |
| 4. Cleaning and Painting Agricultural Tractors and Equipment | (2-12) | 8224-A |
| 5. Agricultural Equipment Design and Transmission of Power | (1,3,4,10) | 8201-C,8204-A |
| **C. Operation, Service, and Repair of Internal Combustion Engines** | | |
| 1. Principles of Engine Operation | (3) | 8203-A,8793-A |
| 2. Diagnosis, Service, and Repair Engines | (3,12) | 8203-B,8793-B,8793-C |
| **D. Operation, Maintenance, and Repair of Agricultural Tractors and Equipment** | | |
| 1. Safe Operation of Agricultural Tractors and Equipment | (1,2,4-11) | 8201-A |
| 2. Importance of Maintenance of Agricultural Tractors and Equipment | (1,2,4-11) | 8201-B |
| 3. Repair and Recondition Agricultural Equipment | (4-11) | 8212-A |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Operation, Service, and Repair of Engine and Equipment Component Parts and Systems** | | |
| 1. Operation, Service, and Repair of Power Trains | (4) | 8204-A,8794-F |
| 2. Operation, Service, and Repair of Steering and Braking Systems | (5,9) | 8794-H |
| 3. Operation, Service, and Repair of DC Electrical and Electronic Systems | (6,12) | 8209-A,8209-B 8209-C,8209-D,8211-A,8231-A |
| 4. Operation, Service, and Repair of Engine Cooling Systems | (7) | 8206-A |
| 5. Operation, Service, and Repair of Fuel Intake and Exhaust Systems and Selection of Fuels | (3,8,11) | 8205-A,8208-A,8208-B,8208-C |
| 6. Operation, Service, and Repair of Hydraulic Systems | (10) | 8208-D,8796 |
| 7. Operation, Service, and Repair of Lubrication Systems and Selection of Lubricants | (3,11) | 8204-A,8207-A |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4511) Fundamentals of Service - Engines. Deere and Co., Moline, IL.
(IMS# 4512) Fundamentals of Service - Electrical Systems. Deere and Co., Moline, IL.
(IMS# 4513) Fundamentals of Service - Hydraulics. Deere and Co., Moline, IL.
(IMS# 4514) Fundamentals of Service - Power Trains. Deere and Co., Moline, IL.
(IMS# 4517) Fundamentals of Service - Fuels, Lubricants, and Coolants. Deere and Co., Moline, IL.
(IMS# 4518) Fundamentals of Service - Belts and Chains. Deere and Co., Moline, IL.
(IMS# 4519) Fundamentals of Service - Bearings and Seals. Deere and Co., Moline, IL.
(IMS# 4564) Fundamentals of Service - Shop Tools. Deere and Co., Moline, IL.
(IMS# 1612) Fundamentals of Service - Identification of Part Failures. Deere and Co., Moline, IL.

Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.
Phipps and Reynolds, Mechanics in Agriculture. Interstate Publishing, Danville, IL.
Promersberger and Others, Modern Farm Power. Reston Publishing, Reston, VA.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

(TAEX #s):

| | |
|---|---|
| L-2047 | "Gear Selection and Engine Speed" |
| L-2048 | "Choosing Equipment Size for Efficient Energy Use" |
| L-2049 | "Radial Tractor Tires" |
| L-2050 | "Tractor Wheel Slip Ballasting" |
| L-2051 | "On-Farm Fuel Storage" |
| MP-1238 | "Accurate Bulk Fertilizer Spreading with Spinner Applicators" |

ADDITIONAL REFERENCES AND MATERIALS - Continued

Videos:

| | |
|---|---|
| (IMS# 9792) | "Tractor Safety" |
| (IMS# 9793) | "Diesel Engine Maintenance" |

Software:

| | |
|---|---|
| (IMS# 9175) | "Electrical Systems" (Apple II) |
| (IMS# 9176) | "Hydraulics" (Apple II) |
| (IMS# 9213) | "Engines and Related Review" (Apple II) |
| (IMS# 9214) | "Electrical Systems and Related Review" (Apple II) |
| (IMS# 9215) | "Final Drives and Transmissions and Related Review" (Apple II) |
| (IMS# 9216) | "Hydraulic and Related Review" (Apple II) |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630213 - AGRICULTURAL MACHINERY SERVICE SUPERVISOR

Training as an Agricultural Machinery Service Supervisor is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural machinery service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural machinery service supervisor curriculum guide recommend selected references available through the Instructional Materials Service, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the machinery industry to American agriculture;
(2) understand safe use of tools and equipment;
(3) comprehend information and identify practices related to agricultural power and machinery repair;
(4) reinforce basic technical skills involving terminology, mathematical computations, and application of scientific principles related to agricultural power technology;
(5) demonstrate effective oral and written communication skills, and follow through on assigned tasks;
(6) develop skills in planning and organizing work;
(7) demonstrate invoicing, recordkeeping, and labor pricing procedures;
(8) learn and use procedures for locating parts, application lists and service information utilizing charts, parts catalogs, technical manuals, microfiche readers, and computer terminals;
(9) identify ethical practices and responsibilities;
(10) understand the importance and application of organizational policies and procedures;
(11) demonstrate characteristics for successful working relationships; and
(12) understand the lines of authority and identify effective supervisory techniques.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630213 - AGRICULTURAL MACHINERY SERVICE SUPERVISOR

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Importance of Agricultural Mechanics to American Agriculture | (1) | 8220-A |
| 2. Understanding and Applying Safe Work Practices and Lab Management | (2) | 8600,8780-B,8790 |
| 3. Safe Use of Hand and Power Tools and Equipment | (2) | 8780-A,8791-A,8791-B,8792-C |
| 4. Safe Use of Oxyfuel and Arc Cutting and Welding Equipment in the Repair and Maintenance of Agricultural Equipment | (2-5) | 8782-A,8782-B,8609-A to D |
| **B. Safe Operation of Agricultural Tractors and Equipment** | | |
| 1. Identification and Selection of Tractors and Equipment | (2-5) | 8221-A,8201-C,8792-A,8792-B |
| 2. Safe Agricultural Tractor and Equipment Operation | (2-5) | 8201-A,8211-A,8792-E |
| **C. Principles of Operation, Maintenance, and Repair of Component Parts and Systems of Agricultural Equipment** | | |
| 1. General Daily Maintenance of Agricultural Tractors and Equipment | (2-5) | 8201-B |
| 2. Adjustment and Calibration of Agricultural Tractors and Equipment | (2-5) | 8792-E |
| 3. Use of Gaskets, Sealants, Tubing, Bearings, and Seals | (2-5) | 8202-A,8202-B |
| 4. Principles of Operation and the Repair of Engine Component Systems | (2-5) | 8203-A to C,8206-A,8207-A 8208-A to D |
| 5. Principles of Operation and Repair of Electrical Systems | (2-5) | 8211-A,8231-A,8209-A to D |
| 6. Principles of Operation and Repair of Power Trains | (2-5) | 8204-A |
| 7. Principles of Operation and Repair of Hydraulic Systems | (2-5) | 8205-A,8796 |
| 8. Principles of Operation and Repair of Agricultural Equipment Accessory Systems | (2-5) | 8794-H,8794-I,8206-B |
| 9. Repair and Reconditioning Agricultural Equipment | (2-5) | 8787-A,8787-B,8212-A |
| 10. Clean and Paint Agricultural Tractors and Equipment | (2-5) | 8224-A |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
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| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Locating Parts Numbers and Service Information** | | |
| 1. Use of Application Charts and Parts Catalogs | (3,4,8) | Reference #2 & #3 |
| 2. Use of Microfiche, Microfiche Readers, and Computerized Parts Catalogs and Information Systems | (3,4,8) | 4775,Reference #2 |
| 3. Use of Service and Flat-Rate Manuals | (3,4,8) | Reference #3 & #4 |
| **E. Development of Business Management and Recordkeeping Skills** | | |
| 1. Management Information Systems | (5-10) | Reference #1,4776,8709-A |
| 2. Principles of Accounting | (7-10) | Reference #1,8709-B |
| 3. Work Order and Invoicing Procedures | (5-8,12) | Reference #1,4776 |
| **F. Development of Sales and Marketing Techniques** | | |
| 1. Sales Techniques | (5,9-12) | 4776,8740-E,8753-B |
| 2. Merchandising and Advertising | (5,7) | 4776,Reference #1 |
| **G. Development of Interpersonal Skills and Worker Relationships** | | |
| 1. Formulating Professional and Ethical Work Habits | (5,9-12) | 8372-A |
| 2. Use Proper Etiquette and Behavior | (5,9-12) | 8732-B,8732-C |
| 3. Communication and Problem-Solving Skills | (5,9-12) | 8741-A,8741-B,8741-C,8741-D 8741-E,8741-F,8742-D |
| 4. Working With Diverse Groups and Co-Workers | (5,9-12) | 8741-G,8739-D |

## REFERENCES

Reference #1 Introduction to Agriculture Sales and Service. Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, Stillwater, OK.

Reference #2 Auto Parks Clerk: Student Activities Package. (IMS# 01631), Instructional Materials Service, Trade and Industrial Education

Reference #3 Jacobs and Harrell, Agricultural Power and Machinery. McGraw-Hill Co., New York, NY.

Reference #4 Appropriate Service and Flat-Rate Manuals. (Obtain from various local agricultural machinery dealerships, and/or Vocational Marketing Services, Homewood, IL.)

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4533) Fundamentals of Service - Mowing and Spraying Equipment. Deere and Co., Moline, IL.
(IMS# 4597) Fundamentals of Machine Operation - Agricultural Machinery Safety. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
(IMS# 4612) Fundamentals of Service - Identification of Part Failures. Deere and Co., Moline, IL.
Safe Tractor Operation and Daily Care. AAVIM, Athens, GA.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

**(TAEX #s):**

L-2047 "Gear Selection and Engine Speed"
L-2049 "Radial Tractor Tires"
L-2050 "Tractor Wheel Slip Ballasting"

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630214 - AGRICULTURAL STRUCTURES, EQUIPMENT, AND FACILITIES EMPLOYEE

Training as an Agricultural Structures, Equipment, and Facilities Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural structures, equipment, and facilities training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural structures, equipment, and facilities employee curriculum guide recommend selected references available through the Instructional Materials Service, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand the importance of structures, equipment, and facilities to agriculture;
(2) recognize safety practices which apply to working on or around agricultural structures, equipment, and facilities;
(3) select, safely use, and maintain tools and equipment;
(4) identify and select methods of constructing agricultural structures, equipment, and facilities;
(5) develop and read plans, drawings, and schematic diagrams;
(6) identify and select construction materials and develop a bill of materials;
(7) develop skills in concrete and masonry construction;
(8) plan, construct, repair, and maintain agricultural structures, equipment, and facilities;
(9) understand the importance of taking pride in the quality of work performed; and
(10) provide assistance to other workers.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630214 - AGRICULTURAL STRUCTURES, EQUIPMENT, AND FACILITIES EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Agricultural Mechanics: Importance and Safety | (1,2) | 8220-A,8108,8600 |
| 2. Identifying Safety and Laboratory Procedures Used in Agricultural Construction and Maintenance | (1,2) | 8411 |
| **B. Application and Safe Use of Hand and Power Tools and Equipment Needed in Agricultural Construction** | | |
| 1. Identification and Safe Use of Hand and Power Tools | (2,3,4) | 8601-A,8412,8771 |
| 2. Use of Measurement and Marking Devices | (2,3,4) | 8601-B |
| 3. Selection and Use of Wood and Metal Fasteners | (2,3,4) | 8617 |
| 4. Operation and Use of Oxyfuel Cutting and Welding Equipment in the Fabrication and Maintenance of Agricultural Structures | (2,3,8) | 8609-A |
| 5. Operation and Use of Arc Welding Equipment in the Fabrication and Maintenance of Agricultural Structures | (2,3,8) | 8609-B,8609-C,8609-D,8783 |
| **C. Agricultural Structures, Construction and Maintenance** | | |
| 1. Planning Agricultural Buildings and Structures | (4-8) | 8229-A,8605-B,8767 |
| 2. Selection of Building Materials and Equipment | (4-8) | 8229-B |
| 3. Construction and Maintenance of Agricultural Structures | (4-10) | 8229-C,8620-B 8621-B,8622,8623,8765 |
| 4. Selection of Materials and Construction of Fences | (4-10) | 8607,8766 |
| 5. Planning, Installing, and Maintaining Plumbing Systems | (4-10) | 8603,8618,8233-B |
| **D. Concrete and Masonry Construction: Planning, Placing, Finishing, and Curing** | | |
| 1. Principles of Concrete and Masonry Construction | (4,6,7) | 8230-A,8230-B,8768 |
| 2. Constructing Forms, Placing, Reinforcing, Finishing, and Curing Concrete and Masonry | (4-10) | 8230-B,8230-C,8768 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630214 - AGRICULTURAL STRUCTURES, EQUIPMENT, AND FACILITIES EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Agricultural Structures Electrification** | | |
| 1. Electrical Principles, Terminology, and Safety | (4,5,8) | 8231-A |
| 2. Planning, Installing, and Maintaining Electrical Circuits and Equipment | (4,5,8) | 8232-A,8231-B,8231-C |
| **F. Wood and Metal Paints and Preservatives** | | |
| 1. Cleaning and Preparing Surfaces | (8-10) | 8224-A |
| 2. Applying Paints and Preservatives | (8-10) | 8224-A |
| **G. Development of Interpersonal Skills and Worker Relationships** | | |
| 1. Communication and Problem-Solving Skills | (9-10) | 8741-A,8742-D |
| 2. Working with Diverse Groups and Co-Workers | (9-10) | 8741-G,8793-D |

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4546) Agricultural Wiring Handbook. National Food and Energy Council, Columbia, MO.
(IMS# 4582) Building Fences. AAVIM, Athens, GA.
(IMS# 4585) Concrete Technology. White, George R., Delmar Pub. Inc., Albany, NY.
(IMS# 4606) Beef Housing and Equipment Handbook. MWPS, Iowa State Univ., Ames, IA.
(IMS# 4607) Dairy Housing and Equipment Handbook. MWPS, Iowa State Univ., Ames, IA.
(IMS# 4608) Sheep Housing and Equipment Handbook. MWPS, Iowa State Univ., Ames, IA.
(IMS# 4610) Electric Wiring: Residential - Utility Buildings - Service Areas. AAVIM, Athens, GA.
(IMS# 4618) Swine Housing and Equipment Handbook. MWPS, Iowa State Univ., Ames, IA.
(IMS# 4629) Cooper, Agricultural Mechanics: Fundamentals and Application. (2nd Edition), Delmar Inc., Albany, NY.
(IMS# 4630) Home Repair Handbook. Lane Publishing Company, Menlo Park, CA.
Phillips, Farm Buildings: From Planning to Completion. Doane-Western Inc., St. Louis, MO.
Structures and Environment Handbook - MWPS-1. Midwest Plan Service, Iowa State University, Ames, IA.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

(TAEX #s):
B-972 "Farm Feed Processing-Equipment, Planning, Design"
MP-1167 "Horse Barns and Equipment"

**Videos:**

(IMS# 9561) "Garages: Framing/Sheathing/Roofing/Siding/Finishing/Door Openers"
(IMS# 9566) "Hand and Power Tools"
(IMS# 9683) "Learn to Weld--The Lincoln Way"
(IMS# 9685) "Welding Safely--The Ways the Pros Do It"
(IMS# 9775) "Safety and Operation: Large Metal Power Tools"
(IMS# 9776) "A and B Safety and Operation of Large Wood Power Tools"
(IMS# 9777) "Safety and Operation: Portable Wood Power Tools"

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630215 - SOIL MANAGEMENT EMPLOYEE

Training as a Soil Management Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved soil management training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the soil management employee curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize importance of soil management and conservation in agriculture;
(2) understand practices of soil conservation;
(3) develop skills in using soil measurement instruments;
(4) select, maintain, and care for soil management implements;
(5) select proper implements for required work;
(6) collect soil samples for soil analysis;
(7) build terraces and contour lines;
(8) plant grass seed, sod, or other cover crops to assigned areas;
(9) practice safety when working around machinery;
(10) understand the organization and function of business;
(11) apply accepted business procedures; and
(12) identify agencies that assist in soil conservation.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630215 - SOIL MANAGEMENT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Importance of Soil Management and Conservation** | | |
| 1. Soil Management Effects on the Economy | (1) | 8380,8848-A |
| 2. Occupational Opportunities in the Soil Industry | (1) | Reference #1 |
| **B. Organization and Function of Business** | | |
| 1. Establishing a Budget for Business | (10,11) | 8708-B,8708-C,8708-D |
| 2. Managing Business Records | (10,11) | 8709-A,8709-B,8709-C,8709-D 8709-E,8709-F,8709-H,8709-I,4773 |
| 3. Taxes and Social Security | (10,11) | 8709-G |
| 4. Capital Resources | (10,11) | 8710-A,8710-B,8710-C,8710-D,8710-E |
| 5. Business Risk Management | (10,11) | 8712-A,8712-B |
| 6. Legal Activities in Business Operations | (10,11) | 8711-A,8711-B,8711-C |
| 7. Salesmanship | (10,11) | 4776 |
| 8. Computers in Business | (10,11) | 4771,4772, 4774,4775,8728-A 8728-B,8728-C |
| **C. Soil and Land Measurement** | | |
| 1. Gravimetric Method | (3,5) | 8635-A,Reference #2 |
| 2. Tensiometers | (3,5) | 8635-A,Reference #2 |
| 3. Resistance Blocks | (3,5) | 8635-A,Reference #2 |
| 4. Neutron Probe | (3,5) | 8635-A,Reference #2 |
| 5. Method of Measuring Land | (3,5) | 8234-A,8772 |
| 6. Reading Soil Maps | (3,5) | 8851-A,8851-C |
| **D. Natural Methods of Erosion Control** | | |
| 1. No-Tillage Practices | (2,8) | 8860-A |
| 2. Cover Crops | (2,8) | 8695-C,8634-A,Reference #1 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630215 - SOIL MANAGEMENT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Mechanical Methods of Erosion Control** | | |
| 1. Land Leveling | (2,5,7) | 8234-B |
| 2. Drainage Systems | (2,5,7) | 8635-A,Reference #2 |
| 3. Terraces | (2,5,7) | 8695-C,Reference #1,Reference #2 |
| 4. Contour Lines | (2,5,7) | 8634-A,Reference #1 |
| **F. Soil Analysis** | | |
| 1. Collecting Soil Samples | (5,6) | 8633-A,8853-B,Reference #2 |
| 2. Techniques of Soil Testing | (5,6) | 8633-A,8853-A,Reference #2 |
| 3. Soil Surveys | (5,6) | 8851-B,Reference #1,Reference #2 |
| **G. Soil Management Implements** | | |
| 1. Planting Equipment | (4,5) | 8860-A,Reference #1 |
| 2. Selecting Proper Soil Implements | (4,5) | 8791-A,8792-A |
| 3. Maintaining Soil Implements | (4,5) | 8201-B |
| 4. Safety Practices When Around Machinery | (9) | 8201-A,8220-A,8600,8790 |
| **H. Agencies That Monitor Land Activities** | | |
| 1. Agricultural Stabilization and Conservation Service (ASCS) | (12) | 8691-C,8695-C,Reference #1 |
| 2. Soil Conservation Service (SCS) | (12) | 8635-C,8695-C,8852-A,Reference #1 |
| 3. Soil and Water Conservation Districts (S&WCD) | (12) | 8691-C,8695-C,8851-A,8852-A Reference #1 |
| **I. Understanding Practices of Soil Conservation** | | |
| 1. Importance of Soils | (2) | 8380,8848-A |
| 2. Water Erosion | (2) | 8634-A,8634-B,8850-B,Reference #1 |
| 3. Wind Erosion | (2) | 8634-A,8634-B,8850-B,Reference #1 |
| 4. Recommended Soil Water Conservation Practices | (2) | 8635-C |
| 5. Applying Soil Water Conservation Practices | (2) | 8635-D |

## REFERENCES

Reference #1 Managing Our Natural Resources; Delmar Publishers Inc.; Albany, New York.

Reference #2 Soils--An Introduction To Soils And Plant Growth; Prentice-Hall, Inc.; Englewood Cliffs, New Jersey.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630217 - IRRIGATION EQUIPMENT SALES AND SERVICE

Training in Irrigation Equipment Sales and Service is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved irrigation equipment sales and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the irrigation equipment sales and service curriculum guide recommend selected references available through the Instructional Materials Service, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize importance of irrigation equipment sales and service industry;
(2) understand irrigation water laws and regulations;
(3) determine need for irrigation based on rainfall and economic feasibility;
(4) relate advantages and requirements for successful irrigation;
(5) select proper irrigation system and equipment;
(6) plan irrigation systems;
(7) identify types of irrigation pumps and pipe;
(8) advise customer as to the type of power and water source;
(9) perform service and maintenance procedures for irrigation systems;
(10) develop and practice positive customer relationships;
(11) learn business procedures such as finance, credit ratings, records and inventories; and
(12) practice safe working habits.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630217 - IRRIGATION EQUIPMENT SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Soil and Water Conservation Principles and Procedures** | | |
| 1. Soil and Water: Importance, Loss, and Drainage | (1,2) | 8233-A,8635-A |
| 2. Water Requirements of Crops | (3,4) | 8635-B |
| 3. Soil and Water Conservation Measures | (2) | 8635-C |
| **B. Water Resource Management** | | |
| 1. Water Management and Society's Needs | (1-4) | 8689-B,8689-C,8691-A |
| 2. Water Rights and Water Use Legislation | (2) | 8689-D,8689-F |
| 3. Water Conservation Agencies | (2) | 8691-C |
| **C. Planning, Installation, and Maintenance of Irrigation Systems** | | |
| 1. Agricultural Mechanics: Importance, Safety, Lab Management, Construction Plans, and Bill of Materials | (6,9,12) | 8600,8605-B |
| 2. Land Measurement, Surveying, and Leveling | (5,6) | 8234-B,8771,8772 |
| 3. Planning and Installing Irrigation Systems | (3,5,6) | 8635-B,8691-B,8773 |
| 4. Selecting Irrigation Pumps and Pipe | (6,7) | 8773 |
| 5. Selecting, Installing, and Maintaining Engine Power Systems | (6,7,9) | 8203-A,8625,8793-B,8794-B 8794-C,8794-D,8794-E |
| 6. Selecting, Installing, and Maintaining Electrical Power Systems | (6,8,9) | 8231-C,8232-A,8795 |
| **D. Development of Positive Customer Relations** | | |
| 1. Motivation and Influence | (10) | 8738-C |
| 2. Effective Listening | (10) | 8741-F |
| 3. Effective Communication | (10) | 8741-A,8741-D |
| 4. Employer, Employee, and Customer Relationships | (10) | 8716-B,8739-B |
| 5. Effective Sales Techniques | (10) | 8753-B |
| **E. Understand Business Transactions** | | |
| 1. Economics: Income and Expenses | (11) | 8707-C,8708-A |
| 2. Accounting, Recordkeeping, and Inventories | (11) | 8709-B,8709-H,8749-A |
| 3. Business Finance | (11) | 8710-B,8710-E |

## ADDITIONAL REFERENCES AND MATERIALS

**Text/Handbooks:**

(IMS# 4587) Turner and Anderson, Planning for an Irrigation System. (Latest Edition), AAVIM, Athens, GA.
(IMS# 4622) Hughes, Conservation Farming. (Latest Edition), Deere and Co., Moline, IL.
(IMS# 4629) Cooper, Ag Mechanics: Fundamentals and Applications. (2nd Edition), Delmar Publishers, Albany, NY.
Hansen, Israelsen, and Stringham, Irrigation Principles and Practices. (Current Edition), John Wiley and Sons, New York, NY.
Schwab and Frevert, Elementary Soil and Water Engineering. (3rd Edition), John Wiley and Sons, New York, NY.

**Bulletins:**

Texas Agricultural Extension Service Bulletins. (Obtain from County Extension Office or Department of Agricultural Communications, Texas A&M University, College Station, TX 77843-2112.)

**(TAEX #s):**

| | |
|---|---|
| B-1539 | "Furrow Diking in Texas" |
| B-1610 | "Soil Moisture Monitoring" |
| B-1611 | "Irrigation Systems for Forage Crops" |
| B-1652 | "Chemigation Workbook" |
| B-1670 | "Soil Moisture Management" |
| L-2218 | "Pumping Plant Efficiency and Irrigation Costs" |
| L-2219 | "Center Pivot Irrigation Systems" |
| L-2220 | "Surge Flow Irrigation" |
| L-2298 | "Crop Water Management for the High Plains" |
| L-2422 | "Chemigation Equipment and Safety" |

**Software:**

(IMS# 9151) "Calculating Irrigation Capacity Unknowns" (IBM)

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630219 - RANCH EMPLOYEE

Training as a Ranch Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved ranch training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the ranch employee curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of ranching industry;
(2) select and evaluate cattle, sheep, goats, and horses;
(3) practice and understand proper breeding herd management;
(4) perform restraint and other livestock management practices, such as:
  (a) dehorning
  (b) castration
  (c) docking
  (d) marking
  (e) shearing;
(5) understand principles of animal nutrition;
(6) plan for proper range land management;
(7) construct and maintain ranch buildings and equipment;
(8) fit and show livestock;
(9) use proper sanitation and promote animal health;
(10) identify and diagnose diseases, parasites, and other livestock pests;
(11) understand livestock marketing and ranch business procedures; and
(12) practice safe working habits.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630219 - RANCH EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Discuss the Importance of the Ranching Industry** | | |
| 1. Importance of the Livestock Industry | (1) | Reference #1 |
| 2. Career Opportunities in the Industry | (1) | 9579,9581,Reference #1 |
| 3. Industry Research | (1) | 8823-C |
| **B. Demonstrate Safe Working Habits** | | |
| 1. Agricultural Mechanics: Importance, Safety, and Shop Management | (12) | 8108,8600 |
| 2. Identify Safety and Shop Procedures | (12) | 8411 |
| 3. Safety Color Coding for the Shop | (12) | 4624 |
| 4. Safe Operation and Daily Care of Tractors and Equipment | (12) | 4597 |
| 5. Safe Handling and Restraint of Animals | (12) | 8645-A |
| **C. Select and Evaluate Cattle, Sheep, Goats, and Horses** | | |
| 1. Cattle, Sheep, Goat, and Horse Identification | (2) | 5018,5022,5023 8393,8395,8398,8894 |
| 2. Selecting Beef Cattle, Sheep, Goats, and Horses | (2) | 4037,8399,8401,8404 8643,9534,9535 |
| 3. Live Animal Evaluation | (2) | 4032,4036,4038,8643,8644-A 8892-C,9511,9539,9547,9549 |
| **D. Practice Proper Breeding Herd Management** | | |
| 1. Anatomy and Physiology of Animals | (3) | 8391,8392,8646-A,8646-B 8646-C,8646-D,8646-E,8646-F 8817-B,8817-C |
| 2. Principles of Genetics | (3) | 8406 |
| 3. Methods of Animal Breeding | (3) | 8407 |
| 4. Animal Reproduction | (3) | 8405,9519,9520,9521 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630219 - RANCH EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Practice Proper Breeding Herd Management - Continued** | | |
| 5. Artificial Insemination | (3) | 8818-A |
| 6. Embryo Transfer | (3) | 8818-B |
| 7. Pregnancy Diagnosis (Palpation) | (3) | 5024,8818-C |
| 8. Care of Livestock at Parturition | (3) | 8818-D,9611 |
| **E. Demonstrate Livestock Management Practices** | | |
| 1. Restraint of Livestock | (4) | 8645-A |
| 2. Surgical Skills | (4) | 8645-B,8545-C |
| 3. Immunization Skills | (4) | 8645-E |
| 4. Markings and Identification of Livestock | (4) | 8645-F,9739,9740 |
| 5. Livestock Transportation | (4) | 8645-G |
| **F. Explain the Principles of Animal Nutrition** | | |
| 1. Digestive Systems | (5) | 8646-E,8895-A |
| 2. Feed Nutrients | (5) | 8647-A,8895-C |
| 3. Classes of Feeds and Feed Additives | (5) | 8647-B,8647-C |
| 4. Formulating Rations | (5) | 8821-B,8895-D |
| 5. Livestock Nutrition | (5) | 8821-D,9590 |
| 6. Commercially Prepared Feeds | (5) | 8821-C |
| **G. Generate a Plan for Proper Rangeland Management** | | |
| 1. Principles of Range Ecology | (6) | 8869-B,8871-A |
| 2. Range Carrying Capacity | (6) | 8869-E,8873-B,8873-C,8874-A |
| 3. Identification and Classification of Range Plants | (6) | 5301,5302,5303,8870-A |
| 4. Pasture and Range Management | (6) | 5264,5272,8874-B,8874-C,8876-A |
| 5. Wildlife Considerations on Range Management | (6) | 8875-A,8875-B |
| 6. Improving Rangeland Productivity | (6) | 5323,5333,8876-C |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
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| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **H. Demonstrate Ability to Construct and Maintain Ranch Buildings and Equipment** | | |
| 1. Buildings and Equipment for Livestock | (7) | 4606,4608,4629 8605-A,8605-B,8764,8823-A |
| 2. Concrete Applications to Construction | (7) | 4585,4629,8604-A,8604-B |
| 3. Principles of Fence Construction | (7) | 4582,4583,4629,8766 |
| 4. Irrigation Systems | (7) | 4629,8773 |
| 5. Care and Operations of Tractors and Equipment | (7) | 4600,4603,4629 8792-E,8794-A |
| **I. Demonstrate Proficiency in Fitting and Showing Livestock** | | |
| 1. Fitting and Showing Cattle | (8) | 9525,Resource #1 |
| 2. Fitting and Showing Sheep | (8) | 9526,Resource #2 |
| **J. Generate a Plan to Promote Proper Sanitation and Animal Health** | | |
| 1. Livestock Sanitation Requirements | (9) | 8822-A,Reference #1 |
| 2. Waste Removal Systems | (9) | 8692-C,Reference #1 |
| 3. Animal Welfare and Animal Rights | (9) | 8823-B |
| **K. Identify and Diagnose Diseases, Parasites, and Livestock Pests** | | |
| 1. Livestock Diseases | (10) | 4040,8822-B,Reference #1 |
| 2. External and Internal Parasites in Livestock | (10) | 4039,4040,8822-D,Reference #1 |
| 3. Use of Pharmaceuticals | (10) | 8822-E |
| **L. Demonstrate Proficiency in Livestock Marketing and Ranch Business Procedures** | | |
| 1. Consumption and Production Trends of Animal Production | (11) | 8642-B |
| 2. Farm and Ranch Business Management and Marketing | (11) | 4771,4772,4773 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630219 - RANCH EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **L. Demonstrate Proficiency in Livestock Marketing and Ranch Business Procedures - Continued** | | |
| 3. Electronic Technology in Marketing and Management | (11) | 4774,8517,9155,9156,9158 |
| 4. Ranch Management Practices | (11) | 8816,9522,9523,9613 |

REFERENCES

| | |
|---|---|
| Reference #1 - TEXT | Gillespie, James R. Modern Livestock and Poultry Production. (Current Edition.) Delmar Publishers, Inc. (This text may also serve as a supplemental reference to other topics.) |
| Resource #1 | Local beef cattle fitter and showman. |
| Resource #2 | Local sheep fitter and showman. |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630221 - DAIRY FARM WORKER

Training as a Dairy Farm Worker is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved dairy farm training station. Classroom lessons alternate with work experience to balance the curriculum with on-the-job training. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the dairy farm worker curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the dairy industry;
(2) practice safety on the dairy farm;
(3) understand and operate mechanical milking equipment;
(4) perform proper sanitation practices;
(5) understand milk quality and control;
(6) perform proper practices for feeding dairy cows and calves;
(7) recognize and control parasites and diseases affecting the dairy industry;
(8) understand selection of dairy cattle;
(9) manage dairy herd records;
(10) understand genetics, systems of breeding, and principles of reproduction;
(11) understand methods of marketing and the relationship of federal programs;
(12) practice farm and building maintenance; and
(13) describe the anatomy and physiology of dairy animals.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630221 - DAIRY FARM WORKER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Discuss the Importance of the Dairy Industry** | | |
| 1. Importance of the Dairy Industry | (1) | References #1,#2 |
| 2. Value of Dairy Products | (1) | References #1,#2 |
| 3. Supply and Demand for Dairy Products | (1) | References #1,#2 |
| 4. Career Opportunities in the Dairy Industry | (1) | References #1,#2 |
| **B. Demonstrate Safety on the Dairy Farm** | | |
| 1. Animal Behavior | (2) | 8817-C |
| 2. Safe Handling and Restraint of Animals | (2) | 8645-A |
| 3. Transporting Livestock | (2) | 8645-G |
| 4. Shop Safety | (2) | 8411,8601-A,8779 |
| **C. Identify, Evaluate, and Select Dairy Animals** | | |
| 1. Dairy Cattle Breed Identification | (8) | 8396,8645-F |
| 2. Evaluation and Selection of Dairy Cattle | (8) | 4002,5076,5077,5101,5102,5115 8402,9168,9552,9553,9554,9557 9586,9587 |
| 3. Linear Classification | (8) | 5119 |
| 4. Goats in the Dairy Industry | (8) | 8643 |
| 5. Fitting Dairy Cattle | (8) | 9555 |
| **D. Analyze the Anatomy and Physiology of Dairy Animals** | | |
| 1. Growth and Development | (13) | 8391 |
| 2. The Circulatory System | (13) | 8392,8646-A |
| 3. The Respiratory System | (13) | 8392,8646-B |
| 4. The Skeletal System | (13) | 8392,8646-C |
| 5. The Muscular System | (13) | 8392,8646-D |
| 6. The Exterior, Nervous, Urinary, and Endocrine Systems of Domestic Animals | (13) | 8646-F |
| 7. The Cow's Udder and How it Functions | (13) | 4002 |
| 8. Surgical Skills | (13) | 8645-B,8645-C,8645-D |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630221 - DAIRY FARM WORKER

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Identify and Control Dairy Parasites and Diseases** | | |
| 1. External and Internal Parasites | (7) | 4039,8822-D References #3,#4,#16,#17 |
| 2. Animal Disease Organisms | (7) | 8822-B |
| 3. Animal Diseases | (7) | 4040,8822-C References #5,#6,#7,#8 |
| 4. Treatment of Diseases | (7) | 4040,8645-E,8822-E |
| **F. Explain the Principles of Reproduction and Genetics** | | |
| 1. Animal Reproduction | (10) | 8405,9519,9520,9521 |
| 2. Pregnancy Diagnosis and Parturition | (10) | 8818-C,8818-D,9611 |
| 3. Systems of Breeding | (10) | 8407,8818-A,8818-B |
| 4. Animal Genetics | (10) | 8406 |
| **G. Identify and Operate Milking Equipment and Facilities** | | |
| 1. Milking Equipment | (3) | References #1,#2 |
| 2. Milk Storage Facilities | (3) | References #1,#2 |
| 3. Milking Parlors | (3) | References #1,#2 |
| 4. Identify Milking Systems and Facilities | (3) | References #1,#2 |
| **H. Perform Cleaning and Sanitizing Activities** | | |
| 1. Cleaning and Sanitizing Equipment | (4) | References #1,#2 |
| 2. Cow Care Before and After Milking | (4) | References #1,#2 |
| **I. Practice Milk Management Skills** | | |
| 1. Milking Practices | (5) | References #1,#2 |
| 2. Milk Quality | (5) | References #1,#2,#10 |
| 3. Cooling Milk | (5) | References #1,#2 |
| 4. Managing Milk Flavor | (5) | References #1,#2 |
| 5. Chemical Contamination | (5) | References #1,#2 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **J. Demonstrate Proper Practices for Feeding Dairy Animals** | | |
| 1. Ruminant Digestion | (6) | 8646-E |
| 2. Feed Nutrients | (6) | 8647-A,Reference #14 |
| 3. Classes of Feeds and Additives | (6) | 8647-B,8647-C |
| 4. Formulating Rations and Commercial Feeds | (6) | 8821-B,8821-C |
| 5. Feeding Practices | (6) | 8821-D |
| **K. Recognize and Describe Dairy Herd Management Techniques** | | |
| 1. Dairy Herd Improvement Associations (DHIA) Records | (9) | References #1,#2 |
| 2. Dairy Herd Improvement (DHI) Testing | (9) | References #1,#2 |
| 3. Marking and Identifying Dairy Animals | (9) | References #1,#2 |
| 4. Dairy Farm Budgeting | (9) | References #1,#2 |
| 5. Starting, Maintaining, and Managing the Dairy Herd | (9) | 8642-A,References #1,#2 |
| **L. Recognize the Methods of Marketing and Role of Federal Programs** | | |
| 1. Milk Pricing and Federal Milk Marketing Orders | (11) | References #1,#2,#9 |
| 2. Marketing Milk | (11) | References #1,#2 |
| 3. Milk Grades | (11) | References #1,#2 |
| 4. Seasonal Trends for Dairy Products | (11) | References #1,#2 |
| 5. Dairy Imports and Exports | (11) | References #1,#2 |
| **M. Plan and Maintain Dairy Farm Buildings and Facilities** | | |
| 1. Planning the Dairy Facility | (12) | 4607,8823-B |
| 2. Dairy Herd Housing | (12) | 4607,References #1,#2 |
| 3. Housing for Dairy Replacement Animals | (12) | 4607,8823-B |
| 4. Feed Handling and Storage | (12) | References #1,#2 |
| 5. Manure and Waste Management | (12) | References #1,#2,#11,#12 #13,#15 |

## REFERENCES


| | |
|---|---|
| Reference #1 - TEXT | Gillespie, James R. Modern Livestock and Poultry Production. (Current Edition.) Delmar Publishers, Inc.: Albany, NY. (State Adopted Text) |
| Reference #2 - TEXT | Quinn, Thomas. Dairy Farm Management. (Current Edition.) Delmar Publishers, Inc.: Albany, NY. |
| Reference #3 - B-1080 | "External Parasites of Cattle," Texas Agricultural Extension Service. |
| Reference #4 - L-2333 | "Common Parasites of Cattle," Texas Agricultural Extension Service. |
| Reference #5 - L-2043 | "What You Should Know About Brucellosis," Texas Agricultural Extension Service. |
| Reference #6 - L-2064 | "Brucellosis," Texas Agricultural Extension Service. |
| Reference #7 - L-2187 | "Grass Tetany," Texas Agricultural Extension Service. |
| Reference #8 - L-2300 | "Mastitis Control and Somatic Cell Count," Texas Agricultural Extension Service. |
| Reference #9 - L-2053 | "Federal Milk Marketing Orders," Texas Agricultural Extension Service. |
| Reference #10 - L-2122 | "The Butterfat Differential," Texas Agricultural Extension Service. |
| Reference #11 - B-1446 | "Dairy Manure Handling Systems and Equipment," Texas Agricultural Extension Service. |
| Reference #12 - L-1449 | "Odor Regulation by Nuisance Laws," Texas Agricultural Extension Service. |
| Reference #13 - MP-1341 | "Lagoons for Treatment of Livestock Waste," Texas Agricultural Extension Service. |
| Reference #14 - B-1553 | "Nutrient Composition of Feeds," Texas Agricultural Extension Service. |
| Reference #15 - B-1386 | "Pollution Control for Dairy Farms," Texas Agricultural Extension Service. |
| Reference #16 - L-919 | "Self-Treatment Devices for Horn Fly Control," Texas Agricultural Extension Service. |
| Reference #17 - L-1089 | "The New Screwworm Threat," Texas Agricultural Extension Service. |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630222 - POULTRY HATCHERY EMPLOYEE

Training as a Poultry Hatchery Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved poultry hatchery training station. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the poultry hatchery employee curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the poultry hatchery industry;
(2) perform tasks related to receiving, handling, and processing eggs;
(3) operate and maintain electrical systems including environmental controls and timing devices;
(4) understand the auxiliary power system and the procedures to follow in case of power failure;
(5) perform proper pest management, sanitation, and health practices;
(6) care for and manage chicks and poults at the hatchery;
(7) understand management of hatchery supply flocks;
(8) follow safety practices in a hatchery;
(9) maintain hatchery records;
(10) discuss artificial incubation; and
(11) describe the development of the avian embryo.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630222 - POULTRY HATCHERY EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Relate the Importance of Hatchery Activities to the Poultry Industry** | | |
| 1. Scope of the Poultry Hatchery Industry in Texas, the United States, and the World | (1) | 0418,8642-A |
| 2. Economics and Structure of the U.S. Poultry Hatchery Industry | (1) | 0418 |
| 3. Occupations Within the Poultry Hatchery Industry | (1) | 0418,1050,2902 |
| 4. Impact of Poultry Products on Human Nutrition | (1) | 0418,8654,A-4 References |
| **B. Discuss the Scope of the Poultry Hatchery Industry** | | |
| 1. Historic Events in the Poultry Hatchery Industry | (1) | 0418 |
| 2. Trends in the Texas and U.S. Poultry Hatchery Industry | (1) | 0418,8409,B-2 References |
| 3. Poultry Hatchery's Position and Role in the Poultry Industry | (1) | 0418 |
| 4. National Poultry Improvement Plan (NPIP) | (1) | 0418,B-4 References |
| **C. Describe the Development of the Chick Embryo** | | |
| 1. Early Structural Development | (11) | 0418 |
| 2. Structural Development During Early Incubation | (11) | 0418 |
| 3. Progressive Structural Development | (11) | 0418 |
| 4. Hatching the Chick | (11) | 0418 |
| **D. Identify Factors in the Selection and Storage of Hatchery Eggs** | | |
| 1. Hatchery Supply Flock Selection, Care, and Management | (7) | 0418,397,8403,8816 5021,5036A,5064 9241-9245 |
| 2. Selection of Hatchery Eggs | (2) | 0418 |
| 3. Receiving and Processing Hatchery Eggs | (2) | 0418 |
| 4. Handling and Storage of Hatchery Eggs | (2) | 0418 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Discuss the Principles of Artificial Incubation** | | |
| 1. Artificial Incubation | (10) | 0418 |
| 2. Incubation Period for Poultry Eggs | (10) | 0418 |
| 3. Environmental Conditions of the Hatcher | (10) | 0418 |
| **F. Describe Hatchery Management Practices and Services** | | |
| 1. Care and Maintenance of Hatchery Equipment | (3),(4),(8) | 0418,4500 & 4600 Series 8763,F-1 References |
| 2. Sanitation and Health in the Hatchery | (5),(8) | 0418,8655-C F-2 References |
| 3. Sexing Chicks | (6),(8) | 0418 |
| 4. Beak Trimming, Dubbing, and Vaccination of Chicks | (6),(8) | 0418 |
| 5. Transporting Newly Hatched Birds | (6),(8) | 0418 |
| 6. Safety in Use of Chemicals in Hatcheries | (8) | 0418,5901,8696-A,8696-B F-6 References |
| 7. Pest Management Practices | (5) | 0418,0242,8822-A,8822-B,8822-C 8822-E F-7 References |
| **G. Maintain Hatchery Records** | | |
| 1. Inventory Records | (9) | 9210,G-1 References |
| 2. Daily-Weekly-Monthly Reports | (9) | G-2 References |
| 3. Production Records | (9) | 8709-H,G-3 References |
| 4. Income and Expense Records | (9) | 8001,8708-A,8709-D G-4 References |
| 5. Financial Records | (9) | 8709-F,G-5 References |
| 6. Computer Assisted Recordkeeping | (9) | 4771-4775,8715-A,8764 G-6 References |
| 7. Computing Taxes | (9) | 8709-G |

## ADDITIONAL REFERENCES

Suggested Textbooks for this occupational area include but are not limited to:

Barrick, R.K. & Hobart L. Harmon. Animal Production and Management, McGraw-Hill Book Company: Dallas, TX.
Donahue, Roy L. & James E. Christiansen. Exploring Agriculture: An Introduction to Food and Agriculture, Prentice-Hall, Inc.: Englewood Cliffs, NJ.
Ensminger, M.E. Animal Science Digest, Interstate Printers & Publishers, Inc.: Danville, IL.
Ensminger, M.E. & C.G. Olentine, Jr. Feeds & Nutrition - Abridged, The Ensminger Publishing Company: Clovis, CA.
Gillespie, James R. Modern Livestock & Poultry Production, Delmar Publishers Inc: USA.
Hoover, N.K. Handbook of Agricultural Occupations, Interstate Printers & Publishers, Inc.: Danville, IL.
Kingston, Mike (Editor). Texas Almanac, (reference to sections in agriculture and statistical data), A.H. Belo Corporation: Dallas, TX. (available by purchase from Gulf Publishing Company, P.O. Box 2608, Houston, Texas 77252; Phone AC 713/520-4444).
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).
Smith, D.T. (Editor). 1990 Yearbook of Agriculture: Americans in Agriculture - Portraits of Diversity, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

A-4 References:
B-1413, "Nutritive Value of Foods," TAEX

B-2 References:
Various references on trends for poultry hatcheries are available from the Texas Department of Agriculture, Austin, Texas.

B-4 References:
Contact the American Poultry Association, USDA, or the Texas Department of Agriculture, Austin, Texas.

ADDITIONAL REFERENCES - Continued

F-1 References:
B-1411, "Selecting Ventilating Equipment for Animal and Poultry Houses," TAEX
B-1404, "Home and Farm Security: Machine and Equipment Identification," TAEX
L-2048, "Choosing Equipment Size for Efficient Energy Use," TAEX

F-2 References:
L-1189, "Confined Animals and the Public Environment," TAEX
L-1367, "Feedlot Runoff Control Principles," TAEX
L-1449, "Odor Regulation by Nuisance Laws," TAEX
L-1497, "Methane Generation from Livestock Waste," TAEX
L-2289, "Composting Manure and Sludge," TAEX
MP-1012, "Resources Available to Stop Pollution," TAEX
MP-1297, "Dilution of Feedlot Runoff," TAEX
MP-1341, "Lagoons for Treatment of Livestock Waste," TAEX

F-6 References:
L-0427, "! Cuidado con los Venenos ! (Safety First with Insecticides)," TAEX
L-1026, "Use Pesticides Safely," TAEX
L-1135, "Exposicion a Pesticides ... Medidas Protectoras (Protective Measures for Pesticide Exposure)," TAEX
L-1167, "Pesticide Exposure - Protective Measures," TAEX
L-2039, "Poison Perils Checklist," TAEX
L-2087, "Texas Poison Control Centers," TAEX
L-2282, "Proper Usage of Drugs and Chemicals in Food Animals," TAEX
MP-0437, "Safe Use of Chemicals in Agriculture," TAEX
MP-1289, "Using Pesticides: Private Applicator Manual," TAEX

F-7 References:
B-1031A, "Manual of Poultry Diseases," TAEX
B-1088, "External Parasites of Texas Poultry," TAEX
B-1279, "Mycotoxins in Feed and Food Producing Crops," TAEX
B-1306, "Suggestions for Managing External Parasites of Texas Livestock and Poultry," TAEX
B-1378, "A Statewide Pest Management Plan for Texas," TAEX
B-1536, "Fire Ants and Their Control," TAEX
B-1608, "Infectious Laryngotracheitis of Poultry," TAEX
L-1744, "Mosquito Pests of Man and Animals," TAEX
L-1900, "Controlling Rats and Mice with Anticoagulants," TAEX

ADDITIONAL REFERENCES - Continued

L-1900-S, "Como Controlar Ratas y Ratones con Anticoagulantes (Controlling Rats and Mice with Anticoagulants)," TAEX
L-1912, "Snakes and Their Control," TAEX
L-1916, "Control of Rats and Mice," TAEX
L-1916-S, "El control de Ratas y Ratones (Control of Rats and Mice)," TAEX
L-1919, "Controlling Feral Pigeons," TAEX
L-1920, "Controlling House Sparrows," TAEX
L-2089, "Fly Control Around the House," TAEX
"Integrated Pest Management: Rodent Control in Poultry Operations" (slide set and audio cassette program) Venard Films, Ltd., Peoria, Illinois 61654.

G-1 References:
L-1898, "Inventory," TAEX

G-2 References:
L-1897b, "Monthly Summary," TAEX

G-3 References:
L-1899, "Field and Production Record," TAEX

G-4 References:
L-1891, "Operating Income," TAEX
L-1892, "Operating Expense," TAEX
L-2007, "Net Income," TAEX

G-5 References:
B-1522, "Financial Record - Agriculture," TAEX
L-1103, "What Should My Financial Reports Tell Me?," TAEX
L-1878, "The Financial Record Book for the Agricultural Producer (complete)," TAEX
L-1878a, "The Financial Record Book for the Agricultural Producer (insert pages)," TAEX
L-1878b, "Introduction to the Financial Record Book for the Agricultural Producer," TAEX
MP-1304, "Financial Record Book," TAEX

G-6 References:
B-1516, "Microcomputers for Farm and Ranch Management," TAEX
L-1824, "Microcomputers for Farm and Ranch," TAEX
L-2106, "How to Shop for a Home Computer," TAEX
L-2186, "Microcomputer Software for Farmers and Ranchers," TAEX

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630224 - HORSE FARM EMPLOYEE

Training as a Horse Farm Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved horse farm training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the horse farm employee curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the horse industry;
(2) understand selection of horses;
(3) use correct methods for feeding horses;
(4) understand genetics, systems of breeding, principles of reproduction, and care of breeding herds;
(5) perform management procedures such as handling, care of feet, and transporting;
(6) practice farm and building maintenance;
(7) develop skills necessary to train, fit, show, and sell horses;
(8) understand range and pasture management practices;
(9) perform proper sanitation procedures;
(10) recognize and control parasites and diseases affecting horses;
(11) understand farm and ranch management procedures such as leases, taxes, and legal documents; and
(12) practice safe working habits on the farm.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630224 - HORSE FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Recognize the Importance of the Horse Industry** | | |
| 1. The Influence of Horses on Our Society | (1) | 8890-A |
| 2. Horse Ownership Obligations and Benefits | (1) | 8890-B |
| **B. Perform Management Procedures Safely** | | |
| 1. Catching and Haltering Horses | (5,12) | 8900-A |
| 2. Leading and Tying Horses | (5,12) | 8900-B |
| 3. Restraining Horses | (5,12) | 8900-C |
| 4. Loading and Hauling Horses | (5,12) | 8900-D |
| 5. Saddling and Bridling Horses | (5) | 8900-E |
| 6. Mounting and Riding Horses | (5) | 8900-F |
| 7. Trailer Loading | (5,12) | 9531 |
| 8. Introduction to Horsemanship-Western Style | (5) | 9620 |
| **C. Recognize Criteria for the Selection of Horses** | | |
| 1. Selection According to Use | (2) | 8891 |
| 2. Selection According to Breed | (2) | 8894 |
| 3. Selection Considering the Age | (2) | 8892-A |
| 4. Selection Considering the Colors and Markings | (2) | 8892-B |
| 5. Selection Considering the Pedigrees | (2) | 8892-C |
| 6. Conformation of Horses | (2) | 8893-B |
| 7. Blemishes and Unsoundness of Horses | (2) | 8893-C |
| **D. Demonstrate the Correct Methods for Feeding Horses** | | |
| 1. The Equine Digestive System | (3) | 8895-A |
| 2. Classes of Feeds for Horses | (3) | 8895-B |
| 3. Nutrient Requirements of Horses | (3) | 8895-C |
| 4. Formulating Rations for Horses | (3) | 8895-D |
| 5. Feeding Management Techniques for Horses | (3,8) | 8895-E,Reference #1 |
| 6. Equine Nutrition | (3) | 9590 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630224 - HORSE FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Evaluate Waste Management Procedures for Equine Production** | | |
| 1. Waste Management | (9) | Reference #2 |
| 2. Environmental Concerns of Waste Management | (9) | 8692-C |
| **F. Identify Symptoms, Causes, and Treatment of Diseases and Parasites in Horses** | | |
| 1. Vital Life Signs of Horses | (10) | 8896-A |
| 2. Equine Disease Recognition, Treatment, and Control | (10) | 4037,8896-E,Reference #3 |
| 3. Internal and External Parasites of Horses | (10) | 4037,8896-D,Reference #4 |
| 4. Equine Dental Problems and Treatments | (10) | 8896-C |
| 5. First Aid for Horses | (10) | 4037,8896-B |
| **G. Identify Equine Breeding Systems** | | |
| 1. The Equine Reproductive System | (4) | 4037,8901-A |
| 2. Horse Breeding Techniques | (4) | 4037,8901-B |
| 3. Diagnosing Pregnancy in Horses | (4) | 4037,8901-C |
| 4. Caring for Brood Mare and Foal | (4) | 4010,4037,9532 |
| 5. Growth and Development of Horses | (4) | 4037,8901-D |
| 6. Animal Genetics | (4) | 4037,8406 |
| **H. Demonstrate Skills in Equine Grooming, Fitting, and Training** | | |
| 1. Daily Grooming of Horses | (7) | 4037,8897-A |
| 2. Trimming and Clipping Horses | (7) | 4037,8897-B |
| 3. Bathing and Blanketing Horses | (7) | 4037,8897-C |
| 4. Anatomy and Care of Horses' Feet | (7) | 4037,8898 |
| 5. Exercising and Training Horses | (7) | 4037 |
| 6. Training Techniques for Horses | (7) | 4037 |
| 7. Methods of Selling Horses | (7) | 4037 |
| 8. Grooming Horses for Shows | (7) | 4037,8897-D |
| 9. Types of Shows | (7) | 4037 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630224 - HORSE FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **I. Identify Facilities and Buildings for Equine Production** | | |
| 1. Facilities for Horses | (6) | 8899-F,Reference #5 |
| 2. Planning and Site Selection | (6) | 4037 |
| 3. Planning Pastures, Fences, and Corrals | (6,8) | 4037,Reference #6 |
| 4. Bedding for Horses | (6) | 4037 |
| **J. Manage Equine Production Records** | | |
| 1. Legal Documents | (11) | 8711-C |
| 2. Microcomputers for Managing Records | (11) | Reference #7,#8 |
| 3. Maintaining and Evaluating Equine Records | (11) | 4037 |
| 4. Leasing Procedure for Equine Operations | (11) | 8706-C,8725-A,8726-C |
| 5. Taxation of Equine Operations | (11) | 8709-F,8709-G,8709-H,8725-B |

224 - S

REFERENCES


Reference #1 - B-1542 "Horse Pastures for Texas," Texas Agricultural Extension Service.

Reference #2 - Text Gillespie, James R. Modern Livestock and Poultry Production. (Current Edition.) Delmar Publishers, Inc.: Albany, New York. (State Adopted Text)

Reference #3 - L-2233 "Potomac Horse Fever in Texas," Texas Agricultural Extension Service.

Reference #4 - L-1420 "Internal Parasites of the Horse," Texas Agricultural Extension Service.

Reference #5 - MP-1167 "Horse Barns and Equipment," Texas Agricultural Extension Service.

Reference #6 - B-1542 "Horse Pastures for Texas," Texas Agricultural Extension Service.

Reference #7 - B-1516 "Microcomputers for Farm and Ranch Management," Texas Agricultural Extension Service.

Reference #8 - L-2186 "Microcomputers Software for Farmers and Ranchers," Texas Agricultural Extension Service.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630226 - POULTRY FARM WORKER, BROILER PRODUCTION

Training as a Broiler Production Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved broiler production training station. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the broiler production curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the broiler industry;
(2) identify safety practices on a poultry farm;
(3) understand poultry farm business records;
(4) understand management practices;
(5) select, care for, and maintain mechanical equipment;
(6) learn sanitation and health practices;
(7) understand the prevention and control of diseases;
(8) understand the control of internal and external pests;
(9) feed broilers;
(10) market broilers;
(11) perform mechanical related activities; and
(12) understand poultry nutrition.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630226 - POULTRY FARM WORKER, BROILER PRODUCTION

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Relate the Importance of Broiler Production to the Poultry Industry** | | |
| 1. Scope of the Broiler Industry in Texas, the United States, and the World | (1) | 0414,0418,8642-A |
| 2. Economics and Structure of the U.S. Broiler Industry | (1) | 0418 |
| 3. Occupations Within the Broiler Industry | (1) | 0418,1050,2902 |
| 4. Impact of Poultry Products on Human Nutrition | (1) | 0418,8642-B,8653-B,8654<br>A-4 References |
| **B. Discuss the Scope of the Broiler Production Industry** | | |
| 1. Integration of the Broiler Industry | (1) | 0414,0418 |
| 2. Efficiency Gains within the Industry | (1) | 0418 |
| 3. Geographic and Economic Concentration of Broilers | (1) | 0418 |
| 4. Market Distribution of Broilers | (1) | 0418,B-4 References |
| **C. Describe Broiler Farm Facilities and Equipment** | | |
| 1. Broiler Confinement Housing | (2,5,11) | 0418,8763 |
| 2. Confinement House Equipment | (2,5,11) | 0418,C-2 References |
| 3. Safety in Use of Chemicals in Broiler Farm Facilities | (2) | 0418,5901,8696-A & B<br>C-3 References |
| **D. Describe Broiler Farm Management Practices** | | |
| 1. Broiler Chick Selection | (4,6,7,8) | 0418,8397,8403,5021<br>D-1 References |
| 2. Housing and Equipment Management | (4,6,7,8) | 0418,4500 & 4600 Series<br>D-2 References |
| 3. Growth Management | (4,6,7,8) | 0418,D-3 References |
| 4. Health and Sanitation Management | (4,6) | 0418,8822-A,8822-B<br>D-4 References |
| 5. Pest Management Practices | (7,8) | 0242,0418,8822-C,8822-E<br>D-5 References |
| 6. General Management Procedures | (4) | 8816,9241-9245 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630226 - POULTRY FARM WORKER, BROILER PRODUCTION

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Conduct Broiler Feeding Activities** | | |
| 1. Nutrient and Feed Requirements of Broilers | (9,12) | 0418,8647-A |
| 2. Feed Ingredients | (9,12) | 0418,8647-A |
| 3. Feed Additives | (9,12) | 0418,8647-C |
| 4. Feed Preparation | (9,12) | 0418,8647-B |
| 5. Broiler Rations | (9,12) | 0418,8821-B |
| 6. Management Practices Influencing Feed Conversion | (9,12) | 0418,E-6 References |
| 7. Feeding Research | (9,12) | 0418,E-7 References |
| **F. Identify Factors That Affect Marketing Broilers** | | |
| 1. Marketing Broilers | (10) | 8714-A thru G<br>F-1 References |
| 2. Preparing Live Broilers for Market | (10) | 0219,0414 |
| 3. Standards of Quality and Grades of Live Broilers | (10) | 0414 |
| 4. Foreign Markets for Broilers | (10) | 8714-A thru G<br>F-4 References |
| 5. Broiler Marketing Trends | (10) | 8409,8714-A thru G<br>F-5 References |
| **G. Maintain Broiler Farm Records** | | |
| 1. Income, Expense, and Other Financial Records | (3) | 8001,8708-A,8709-D,8709-F<br>G-1 References |
| 2. Daily, Weekly, and Monthly Reports | (3) | G-2 References |
| 3. Production Records | (3) | 8709-H,G-3 References |
| 4. Inventory Records | (3) | 9210,G-4 References |
| 5. Computer Assisted Recordkeeping | (3) | 4771-4775,8715-A,8764<br>G-5 References |
| 6. Computing Taxes | (3) | 8709-G |

## ADDITIONAL REFERENCES

Suggested Textbooks for this occupational area include but are not limited to:

Barrick, R.K. & Hobart L. Harmon. Animal Production and Management, McGraw-Hill Book Company: Dallas, TX.
Donahue, Roy L. & James E. Christiansen. Exploring Agriculture: An Introduction to Food and Agriculture, Prentice-Hall, Inc.: Englewood Cliffs, NJ.
Ensminger, M.E. Animal Science Digest, Interstate Printers & Publishers, Inc.: Danville, IL.
Ensminger, M.E. & C.G. Olentine, Jr. Feeds & Nutrition - Abridged, The Ensminger Publishing Company: Clovis, CA.
Gillespie, James R. Modern Livestock & Poultry Production, Delmar Publishers Inc: USA.
Hoover, N.K. Handbook of Agricultural Occupations, Interstate Printers & Publishers, Inc.: Danville, IL.
Kingston, Mike (Editor). Texas Almanac, (reference to sections in agriculture and statistical data), A.H. Belo Corporation: Dallas, TX. (available by purchase from Gulf Publishing Company, P.O. Box 2608, Houston, Texas 77252; Phone AC 713/520-4444).
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).
Smith, D.T. (Editor). 1990 Yearbook of Agriculture: Americans in Agriculture - Portraits of Diversity, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

A-4 References:
B-1413, "Nutritive Value of Foods," TAEX
L-2092, "Food Facts and Fallacies," TAEX

B-4 References:
Various references on prices and outlook for poultry broilers are available from the Texas Department of Agriculture, Austin, Texas.

C-2 References:
B-1411, "Selecting Ventilating Equipment for Animal and Poultry Houses," TAEX
B-1404, "Home and Farm Security: Machine and Equipment Identification," TAEX
L-2048, "Choosing Equipment Size for Efficient Energy Use," TAEX

ADDITIONAL REFERENCES - Continued

C-3 References:
L-0427, "! Cuidado con los Venenos ! (Safety First with Insecticides)," TAEX
L-1026, "Use Pesticides Safely," TAEX
L-1135, "Exposicion a Pesticides ... Medidas Protectoras (Protective Measures for Pesticide Exposure)," TAEX
L-1167, "Pesticide Exposure - Protective Measures," TAEX
L-2039, "Poison Perils Checklist," TAEX
L-2087, "Texas Poison Control Centers," TAEX
L-2282, "Proper Usage of Drugs and Chemicals in Food Animals," TAEX
MP-0437, "Safe Use of Chemicals in Agriculture," TAEX
MP-1289, "Using Pesticides: Private Applicator Manual," TAEX

D-1 References:
L-0962, "Keys to Profitable Broiler Production," TAEX
L-1247, "The Home Broiler Flock," TAEX

D-2 References:
B-1404, "Home and Farm Security: Machine and Equipment Identification," TAEX
L-0962, "Keys to Profitable Broiler Production," TAEX
L-1247, "The Home Broiler Flock," TAEX
L-2048, "Choosing Equipment Size for Efficient Energy Use," TAEX

D-3 References:
L-0962, "Keys to Profitable Broiler Production," TAEX
L-1247, "The Home Broiler Flock," TAEX

D-4 References:
L-0962, "Keys to Profitable Broiler Production," TAEX
L-1189, "Confined Animals and the Public Environment," TAEX
L-1247, "The Home Broiler Flock," TAEX
L-1367, "Feedlot Runoff Control Principles," TAEX
L-1449, "Odor Regulation by Nuisance Laws," TAEX
L-1497, "Methane Generation from Livestock Waste," TAEX
L-1653, "Proper Sanitization for Broiler and Pullet Houses," TAEX
L-2289, "Composting Manure and Sludge," TAEX
MP-1012, "Resources Available to Stop Pollution," TAEX
MP-1297, "Dilution of Feedlot Runoff," TAEX
MP-1341, "Lagoons for Treatment of Livestock Waste," TAEX

ADDITIONAL REFERENCES - Continued

D-5 References:
B-1031A, "Manual of Poultry Diseases," TAEX
B-1088, "External Parasites of Texas Poultry," TAEX
B-1279, "Mycotoxins in Feed and Food Producing Crops," TAEX
B-1306, "Suggestions for Managing External Parasites of Texas Livestock and Poultry," TAEX
B-1378, "A Statewide Pest Management Plan for Texas," TAEX
B-1536, "Fire Ants and Their Control," TAEX
B-1608, "Infectious Laryngotracheitis of Poultry," TAEX
L-1744, "Mosquito Pests of Man and Animals," TAEX
L-1900, "Controlling Rats and Mice with Anticoagulants," TAEX
L-1900-S, "Como Controlar Ratas y Ratones con Anticoagulantes (Controlling Rats and Mice with Anticoagulants)," TAEX
L-1912, "Snakes and Their Control," TAEX
L-1916, "Control of Rats and Mice," TAEX
L-1916-S, "El control de Ratas y Ratones (Control of Rats and Mice)," TAEX
L-1919, "Controlling Feral Pigeons," TAEX
L-1920, "Controlling House Sparrows," TAEX
L-2089, "Fly Control Around the House," TAEX
"Integrated Pest Management: Rodent Control in Poultry Operations" (slide set and audio cassette program) Venard Films, Ltd., Peoria, Illinois 61654.

E-6 References:
L-0962, "Keys to Profitable Broiler Production," TAEX

E-7 References:
B-0972, "Farm Feed Processing - Equipment, Planning, Design," TAEX
L-2262, "Aeration of Stored Grain," TAEX

F-1 References:
B-1609, "Federal Agricultural Marketing Programs," TAEX

F-4 References:
B-1609, "Federal Agricultural Marketing Programs," TAEX

F-5 References:
Various references on prices and outlook for poultry products are available from the Texas Department of Agriculture, Austin, Texas.

ADDITIONAL REFERENCES - Continued

G-1 References:
B-1522, "Financial Record - Agriculture," TAEX
L-1103, "What Should My Financial Reports Tell Me?," TAEX
L-1770, "Estimated Costs and Returns of Contract Broiler Production in East Texas," TAEX
L-1878, "The Financial Record Book for the Agricultural Producer (complete)," TAEX
L-1878a, "The Financial Record Book for the Agricultural Producer (insert pages)," TAEX
L-1878b, "Introduction to the Financial Record Book for the Agricultural Producer," TAEX
L-1891, "Operating Income," TAEX
L-1892, "Operating Expense," TAEX
L-2007, "Net Income," TAEX
MP-1304, "Financial Record Book," TAEX

G-2 References:
L-1897b, "Monthly Summary," TAEX

G-3 References:
L-1899, "Field and Production Record," TAEX

G-4 References:
L-1898, "Inventory," TAEX

G-5 References:
B-1516, "Microcomputers for Farm and Ranch Management," TAEX
L-1824, "Microcomputers for Farm and Ranch," TAEX
L-2106, "How to Shop for a Home Computer," TAEX
L-2186, "Microcomputer Software for Farmers and Ranchers," TAEX

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630227 - POULTRY FARM WORKER, COMMERCIAL LAYING FLOCK

Training as a Commercial Laying Flock Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved commercial laying flock training station. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the commercial laying flock curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the commercial laying flock;
(2) recognize safety practices on a poultry farm;
(3) keep records for the laying flock;
(4) understand management practices;
(5) select, care for, and maintain mechanical equipment;
(6) learn sanitation and health practices;
(7) understand the prevention and control of diseases;
(8) control internal parasites;
(9) understand the control of external parasites and other pests;
(10) feed the laying flock;
(11) gather, process, and grade eggs;
(12) market eggs;
(13) perform mechanical skills related to commercial egg production;
(14) understand poultry nutrition;
(15) formulate rations for the commercial laying flock; and
(16) know anatomical features and physiological processes of fowl.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630227 - POULTRY FARM WORKER, COMMERCIAL LAYING FLOCK

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Discuss the Scope of the Egg Production Industry** | | |
| 1. Scope of the Commercial Laying Flock Industry in Relation to the Overall Poultry Industry | (1) | 0418,8642-A<br>A-1 References |
| 2. Impact of Egg Production on Human Nutrition | (1) | 0418,A-2 References |
| 3. Individual Components of the Commercial Laying Flock Industry | (1) | 0418,9828 |
| 4. Occupations Within the Commercial Laying Flock Industry | (1) | 0418,1050,2902 |
| **B. Describe Egg Production Facilities and Equipment** | | |
| 1. Housing Systems | (2,5,13) | 0418,4500 & 4600 Series<br>8763,9828 |
| 2. Construction Principles of Housing Systems | (2,5,13) | 0418,4500 & 4600 Series<br>8763 |
| 3. Housing Equipment | (2,5,13) | 0418,4500 & 4600 Series<br>8763,9828<br>B-3 References |
| 4. Related Facilities and Equipment | (2,5,13) | 0418,4500 & 4600 Series<br>9828,B-4 References |
| 5. Safety in Use of Chemicals in Egg Production Facilities | (2) | 5901,8696-A,8698-B<br>B-5 References |
| **C. Select and Maintain a Commercial Laying Flock** | | |
| 1. Breeding Flock | (1,4,7,8,9) | 0418,8397,8403,5021 |
| 2. Replacement Pullets | (1,4,7,8,9) | 0418,8397,8403,5021<br>C-2 References |
| 3. Culling the Laying Flock | (1,4,7,8,9) | 0418 |
| 4. Replacement Pullet Evaluation | (1,4,7,8,9) | 0418,4001,4030<br>C-4 References |
| 5. Production Hen Evaluation | (1,4,7,8,9) | 0418,4001,4030 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Discuss the Anatomy and Physiology of the Fowl** | | |
| 1. Integumentary System | (16) | 0418,8646-F |
| 2. Muscular System | (16) | 0418,8646-D |
| 3. Skeletal System | (16) | 0418,8646-C |
| 4. Respiratory System | (16) | 0418,8646-B |
| 5. Circulatory System | (16) | 0418,8646-A |
| 6. Digestive System | (16) | 0418,8646-E |
| 7. Reproductive System | (16) | 0418,8405 |
| 8. Urinary and Endocrine Systems | (16) | 0418,8646-F,8817-B |
| 9. Egg Development and Physiology | (16) | 0418 |
| **E. Conduct a Sound Nutritional Program** | | |
| 1. Nutrient and Feed Requirements of Egg-Type Chickens and Pullets | (10,14) | 0418,8647-A |
| 2. Feed Ingredients | (10,14) | 0418,8647-B |
| 3. Feed Additives | (10,14) | 0418,8647-C |
| 4. Feed Preparation, Rations, and Conversion | (10,15) | 0418,8821-B<br>E-4 References |
| **F. Describe Egg Production Management Practices** | | |
| 1. Health and Sanitation Management | (4,6) | 0418,8822-A & B,9828<br>F-1 References |
| 2. Facility and Equipment Management | (2,4,5,13) | 0418,4500 & 4600 Series<br>9828,F-2 References |
| 3. Pullet and Laying Hen Management | (4) | 0418,9828<br>F-3 References |
| 4. General Egg Production Practices | (4) | 0418,9828<br>F-4 References |
| 5. Pest Management Practices | (7,8,9) | 0242,0418,8822-C & E<br>F-5 References |
| 6. General Management Procedures | (4) | 8816,9241-9245 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630227 - POULTRY FARM WORKER, COMMERCIAL LAYING FLOCK

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **G. Identify Factors Involved with Processing Table Eggs** | | |
| 1. Collecting Eggs | (11,13) | 0417,418,9828 |
| 2. Cleaning and Treating Eggs | (11,13) | 0417,0418,9828 |
| 3. Grading and Sizing Eggs | (11,13) | 0416,0417,0418,4001 4030,5010,5036C,5056 5122,5139,8663-B,9828 |
| 4. Packaging and Storing Eggs | (11,13) | 0417,0418,8663-A,9828 |
| **H. Discuss Marketing Table Eggs** | | |
| 1. Egg Marketing Channels | (12) | 0417,8663-C 8714-A thru G,9828 H-1 References |
| 2. Extended Shell Egg Processing | (11,12) | 0417,8663-C H-2 References |
| 3. Egg Pricing System | (12) | 0417,8663-C H-3 References |
| 4. Federal Inspection of Shell Eggs | (12) | 0417,8663-C |
| **I. Prepare and Maintain Commercial Laying Flock Records** | | |
| 1. Income, Expense, and Other Financial Records | (3) | 8001,8708-A,8709-D 8709-F,I-1 References |
| 2. Daily, Weekly, and Monthly Reports | (3) | I-2 References |
| 3. Production Records | (3) | 8709-H,I-3 References |
| 4. Inventory Records | (3) | 9210,I-4 References |
| 5. Computer Assisted Recordkeeping | (3) | 4771-4775,8715-A,8764 I-5 References |
| 6. Computing Taxes | (3) | 8709-G |

## ADDITIONAL REFERENCES

Suggested Textbooks for this occupational area include but are not limited to:

Barrick, R.K. & Hobart L. Harmon. Animal Production and Management, McGraw-Hill Book Company: Dallas, TX.
Donahue, Roy L. & James E. Christiansen. Exploring Agriculture: An Introduction to Food and Agriculture, Prentice-Hall, Inc.: Englewood Cliffs, NJ.
Ensminger, M.E. Animal Science Digest, Interstate Printers & Publishers, Inc.: Danville, IL.
Ensminger, M.E. & C.G. Olentine, Jr. Feeds & Nutrition - Abridged, The Ensminger Publishing Company: Clovis, CA.
Gillespie, James R. Modern Livestock & Poultry Production, Delmar Publishers Inc: USA.
Hoover, N.K. Handbook of Agricultural Occupations, Interstate Printers & Publishers, Inc.: Danville, IL.
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L-2194, "Caged Layer Manure Management with Flush and Lagoon Systems," TAEX

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L-1026, "Use Pesticides Safely," TAEX
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L-1449, "Odor Regulation by Nuisance Laws," TAEX
L-1497, "Methane Generation from Livestock Waste," TAEX
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L-2289, "Composting Manure and Sludge," TAEX
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B-1088, "External Parasites of Texas Poultry," TAEX
B-1279, "Mycotoxins in Feed and Food Producing Crops," TAEX
B-1306, "Suggestions for Managing External Parasites of Texas Livestock and Poultry," TAEX
B-1378, "A Statewide Pest Management Plan for Texas," TAEX
B-1536, "Fire Ants and Their Control," TAEX
B-1608, "Infectious Laryngotracheitis of Poultry," TAEX
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L-1899, "Field and Production Record," TAEX

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L-2106, "How to Shop for a Home Computer," TAEX
L-2186, "Microcomputer Software for Farmers and Ranchers," TAEX

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630230 - CROP FARM EMPLOYEE

Training as a Crop Farm Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved crop farm training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the crop farm employee curriculum guide recommend selected references available through the Instructional Materials Service. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the farming industry;
(2) recognize the need for keeping accurate records and using them in farm management;
(3) understand the proper use of machinery and equipment and perform necessary maintenance;
(4) perform needed maintenance on farm structures such as buildings and fences;
(5) identify the factors affecting crop selection;
(6) understand the various methods of land preparation;
(7) understand the various methods of planting, cultivating, and harvesting of crops;
(8) develop an understanding of fertilizers and their uses;
(9) carry out a program of irrigation management;
(10) recognize the importance of weed control and methods of controlling weeds; and
(11) identify and control insects and diseases of crops.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING

ACT #11630230 - CROP FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Recognize the Role of Farming in Agriculture** | | |
| 1. Importance of Agriculture | (1) | 8706-A |
| 2. Importance of Food Science Technology | (1) | 8408 |
| 3. Trends in Food Production | (1) | 8409 |
| 4. Sustainable Agriculture | (1) | 8515 |
| 5. Economic Importance and Uses of Major Agricultural Crops | (1) | 8637-A |
| 6. Economic Importance of Plants in the Food Chain | (1) | 8857-A |
| 7. Major Agricultural Crop Production Areas | (1) | 8637-B |
| **B. Compare Related Areas of Support With Farming** | | |
| 1. Careers--Agricultural Producers | (1) | 9581 |
| 2. Research in Plant and Soil Sciences | (1) | 8861-D |
| 3. Energy Conservation | (1) | 8418 |
| 4. Energy Resources | (1) | 8693 |
| 5 Alternative Energy Sources | (1) | 8417 |
| 6. Government Support Agencies | (1) | 8852-A,8852-B,8852-C |
| **C. Explain the Purpose and Need for Recordkeeping in Farm Management** | | |
| 1. Recordkeeping Procedures | (2) | 8709-B,8709-C,8709-D,8709-E |
| 2. Farm Budgeting | (2) | 8708-B,8708-C,8708-D,8715-A |
| 3. Use and Selection of Computers - Agribusiness | | 8715-A |
| 4. Farm Credit | (2) | 8710-B,8710-D |
| 5. Insurance and Risk Management | (2) | 8712-A,8712-B |
| 6. Farm Marketing | (2) | 8714-C,8714-D,8714-E |
| **D. Demonstrate Ability With Machinery and Equipment** | | |
| 1. Fire Prevention and Shop Safety | (3) | 8780-B,8790 |
| 2. Selecting and Operating Tractors | (3) | 8794-A |
| 3. Adjusting, Calibrating, Maintaining, and Operating Equipment | (3) | 8792-E |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630230 - CROP FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Demonstrate Ability With Machinery and Equipment - Continued** | | |
| 4. Selecting Lubricants and Maintaining Lubrication Systems | (3) | 8794-C |
| 5. Fuel System Maintenance: Fuel Selection, Storage, and Handling | (3) | 8794-D |
| 6. Maintaining Machinery Systems | (3) | 8794-B,8794-E,8794-F 8794-G,8794-H,8794-I |
| **E. Demonstrate Ability to Maintain Farm Structures** | | |
| 1. Shop Safety | (4) | 8779,8411 |
| 2. Planning Cost Effective Construction | (4) | 8605-A,8605-B |
| 3. Planning Buildings and Selecting Equipment | (4) | 8763 |
| 4. Working with Concrete | (4) | 8604-A,8604-B |
| 5. Basic Skills in Agricultural Construction | (4) | 8412 |
| 6. Electrical Systems | (4) | 8619 |
| 7. Fences and Fencing | (4) | 8607 |
| 8. Paint Materials and Techniques | (4) | 8606 |
| **F. Recognize the Importance in Crop Selection** | | |
| 1. Plant Growth and Development | (5) | 8385,8386 |
| 2. Plant Structure and Functions of Plant Parts | (5) | 8384 |
| 3. Photosynthesis | (5) | 8858-A |
| 4. Plant Reproduction and Genetics | (5) | 8387,8388,8389,8858-B,8512 |
| 5. Identify Major Agricultural Crops | (5) | 8390,8637-C,8637-D,8637-E 8637-F,8637-G,8637-H |
| **G. Compare the Various Soils and Land Use Management Techniques** | | |
| 1. Soil and Plants: Importance and Interrelationship | (6) | 8848-A |
| 2. Soil Formation, Characteristics, and Properties | (6) | 8380,8381,8382 |
| 3. Classification of Soils and Sampling Procedures | (6) | 8383,8633-A |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **G. Compare the Various Soils and Land Use Management Techniques - Continued** | | |
| 4. Soil Erosion and Its Control | (6) | 8634-A,8695-A,8695-B 8695-C,8853-A,8853-B |
| 5. Land Use Classification and Judging | (6) | 4210,5252,8850-A,8850-B |
| 6. Land Evaluation | (6) | 8856-A,8856-B,8856-C |
| 7. Soil Surveys and Mapping | (6) | 8851-A,8851-B,8851-C |
| 8. Land Management | (6) | 8511,8634-B,8851-D,8855-A |
| **H. Classify Crop Production Practices and Techniques** | | |
| 1. Tillage Practices: Conventional, Minimum, No-Till | (7) | 8860-A |
| 2. Crop Production | (7) | 4310,9748 |
| 3. Post-Harvest Practices | (7) | 8641-B |
| **I. Recognize the Value of Fertilizer and Organic Matter** | | |
| 1. Soil Nutrients and pH | (8) | 8636-A,8636-E |
| 2. Nutrient Requirements of Plants | (8) | 8640-A |
| 3. Recognizing Nutrient Deficiencies in Soil | (8) | 8636-D |
| 4. Fertilizer Types and Application | (8) | 8636-B,8640-B,8640-C |
| 5. Importance of Organic Matter | (8) | 8636-C |
| **J. Apply Water Use Conservation to Irrigation Management** | | |
| 1. Planning, Installing, and Maintaining Irrigation Systems | (9) | 8773 |
| 2. Types of Irrigation Systems and Materials | (9) | 5333,8691-B |
| 3. Importance of Soil Water | (9) | 8635-A,8635-C |
| 4. Mechanical Techniques of Plant Management | (9) | 8641-A |
| 5. Water Requirements of Crops | (9) | 8635-B |
| 6. Agricultural Water Use and Water Rights | (9) | 8689-F,8691-A,8691-D |
| 7. Planning and Distribution of Texas Waters | (9) | 8689-C |
| 8. Water Conservation and Agencies | (9) | 8419,8689-D,8691-C |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630230 - CROP FARM EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **K. Associate the Need for Pest Management With Maintaining a Safe Environment** | | |
| 1. Safe Application of Chemicals on Plants | (10,11) | 8860-B |
| 2. Pest Control in Crops | (10,11) | 5317,8860-C |
| 3. Using Agricultural Chemicals | (10,11) | 8416,8641-C |
| 4. Agricultural Chemicals and the Environment | (10,11) | 8415 |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630234 - MEAT PROCESSING PLANT EMPLOYEE

Training as a Meat Processing Plant Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved meat processing training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the meat processing plant employee curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand equipment care and sanitation;
(2) learn the nutritive value of meats, uses, cooking qualities, and palatability;
(3) use meat additives;
(4) understand biological aspects of processing, handling, and storing meat;
(5) learn meat identification;
(6) identify the wholesale and retail cuts of beef, lamb, and pork;
(7) recognize other meats;
(8) select and grade beef, lamb, and pork carcasses;
(9) purchase slaughter animals and know the market classes and grades of cattle, sheep, and swine;
(10) understand marketing cycles and seasonal changes;
(11) develop knowledge of marketing of other slaughter animals and fish;
(12) learn the slaughter of livestock;
(13) learn meat fabrication, equipment operation, portion control, and specifications;
(14) cut wholesale and retail cuts of beef, lamb, pork, and other slaughter animals and fish;
(15) understand meat preparation and preservation;
(16) evaluate wrapping, labeling, and packaging of meats and fish;
(17) refrigerate and freeze meats and fish;
(18) recognize and merchandise meat and meat by-products;
(19) buy, sell, ship, handle, and receive meats and fish; and
(20) recognize consumer trends.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630234 - MEAT PROCESSING PLANT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Identify Factors in the Safe Operation, Maintenance, and Sanitation of Slaughter and Processing Equipment** | | |
| 1. Chemicals for Sanitation in the Food Industry | (1) | 8655-C |
| **B. Identify Meats and Seafoods** | | |
| 1. Identifying Wholesale and Retail Cuts of Beef | (5,6) | 5014,7019,7021,8010 |
| 2. Identifying Wholesale and Retail Cuts of Pork | (5,6) | 5014,7019,7021,8010 |
| 3. Identifying Wholesale and Retail Cuts of Lamb | (5,6) | 5014,7019,7021,8010 |
| 4. Identifying By-Products of the Meat Industry | (5,7) | 0418-2,8662 |
| 5. Identify Retail Cuts and Value-Added Products of Poultry | (5,7) | 8659-B |
| 6. Classes and Qualities of Fish and Seafood | (5,7) | 8660-A |
| **C. Recognize the Procedure Involved in the Marketing of Food Products** | | |
| 1. Pricing, Labeling, and Displaying Food Products | (18) | 8667-B,Reference #1 |
| 2. Trends in Supply and Demand of Food Products | (10,20) | 8653-B,Reference #2 |
| 3. Convenience Foods and Consumer Preference | (20) | 8667-D,9613,Reference #3 |
| **D. Analyze Meat Grading and Inspection** | | |
| 1. Inspection Standards for the Food Industry | (1,8) | 8655-A |
| 2. USDA Inspection of Meat | (8) | 0413,0414,8657 |
| 3. Evaluating and Grading Carcasses and Wholesale Cuts | (8) | 5036B,5137,5138,8820-A,9512 9514,9515,9517,9584,9585 |
| **E. Understand Nutritive Value of Food Products** | | |
| 1. Nutritive Value of Food Groups | (2) | 8654,Reference #4 |
| 2. Uses of Meat and Seafood | (2) | Resource #1 |
| 3. Cooking Qualities of Meat, Seafood, and Wildlife | (2) | Reference #5 |
| 4. Meat and Seafood Palatability | (2) | Resource #1 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630234 - MEAT PROCESSING PLANT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Understand Nutritive Value of Food Products - Continued** | | |
| 5. Biological Aspects of Processing, Handling, and Storage of Meats | (4) | 8660-C,8661-A,8661-C |
| 6. Preparing Livestock Carcasses for Market | (4,15) | 8656 |
| 7. Meat Additives | (3) | 8658 |
| **F. Understand the Processes of Sales and Purchases of Meats** | | |
| 1. Live Animal Evaluation and Grading | (9) | 0401,0403,0404,0405,0414 5012,8644-A,9547,9548 |
| 2. Purchasing and Sales of Slaughter Animals | (9) | Resource #2 |
| 3. Purchasing and Sales of Processed Meats and Seafoods | (19) | Resource #2 |
| 4. Shipping and Receiving Meats and Seafoods | (19) | Resource #2 |
| **G. Describe the Methods of Preserving and Storing Meats** | | |
| 1. Preserving Red Meat, Poultry, and Fish | (4,15) | 8661-A,Reference #6 |
| 2. Packaging and Labeling Red Meat, Poultry, and Fish | (16) | 8661-B,References #7,#8,#9 |
| 3. Refrigerating and Freezing Red Meat, Poultry, and Fish | (4,17) | 8343,8661-C,Reference #10 |
| **H. Identify the Methods of Fabricating Meats** | | |
| 1. Identify Methods of Fabricating Meats | | |
| a. Beef Slaughtering Process | (12) | 9756 |
| b. Pork Slaughtering Process | (12) | 9769 |
| c. Lamb Slaughtering Process | (12) | 9755 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630234 - MEAT PROCESSING PLANT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **H. Identify the Methods of Fabricating Meats - Continued** | | |
| d. Wholesale and Retail Cuts of Beef | (13,14) | 7019,7021,8010,9770,9771 |
| e. Wholesale and Retail Cuts of Pork | (13,14) | 7019,7021,8010,9772 |
| f. Wholesale and Retail Cuts of Lamb | (13,14) | 7019,7021,8010,9773 |
| g. Preparation of Processed Meats | (13) | 8658 |
| h. Wildlife Slaughter and Fabrication | (13,14) | 8342,9649 |
| 2. Identify Methods of Processing Poultry | | |
| a. The Poultry Slaughtering Process | (11) | 8659-A,References #11 #12,#13 |
| b. Poultry Carcass Evaluation | (13,14) | 0418-2,8644-B,9574 |
| 3. Identify Methods of Processing Fish | | |
| a. Preparing Fish for Food | (14) | 8660-B |
| b. Processing Seafood and Fabricating Specialty Fish Products | (11,13,14) | 8660-C |





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## REFERENCES


Reference #1 - MP-1497 "Meat Marketing Operations in Dallas-Ft. Worth, Houston, and Lubbock." Texas Agricultural Experiment Station, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #2 - L-2225 "Beef Cattle Marketing Alternatives." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #3 - L-2290 "Cost and Yield Comparisons of Ready-to-Cook Chicken Products." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #4 - L-1741 "Food Protein Cost." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #5 - B-1130 "Carcass and Meat Characteristics of Nilgai Antelope." Texas Agricultural Experiment Station, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #6 - L-1664 "Curing and Smoking Poultry." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #7 - L-1415 "Purchasing and Using Turkey Products." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #8 - L-1605 "Broiler Chicken Deboning." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #9 - L-1797 "Boneless Breast of Chicken." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

Reference #10 - B-177 "Freezing Poultry for Home Use." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

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|---|---|
| Reference #11 - B-1383 | "Processing Poultry at Home." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843. |
| Reference #12 - L-1798 | "Chicken Cut-up: Family style." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843. |
| Reference #13 - L-1799 | "Chicken Cut-up: Commercial Style." Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843. |
| Resource #1 | Contact the local high school homemaking teacher. |
| Resource #2 | Contact the manager of the local meat market or slaughter plant. |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630237 - POULTRY PRODUCTS EMPLOYEE

Training as a Poultry Products Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved poultry products training station. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the poultry products employee curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the poultry products industry;
(2) understand inspection and grading procedures;
(3) exercise safety practices;
(4) select, care, and maintain mechanical equipment;
(5) clean and sanitize facilities and equipment;
(6) understand steps in processing, handling, and packaging;
(7) understand by-product utilization removal and rendering;
(8) understand distribution and sales procedures;
(9) understand processing plant management practices;
(10) understand operation economics, quality control, and processing lines; and
(11) control pests.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630237 - POULTRY PRODUCTS EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Identify Factors in Safe Operation, Maintenance, and Sanitation of Poultry Products Facilities and Equipment** | | |
| 1. Sanitation in the Poultry Products Industry | (5,11) | 0414,0417,0418<br>8655-A & C,A-1 References |
| 2. Operation and Maintenance of Poultry Products Equipment | (4,5,10) | 4500 & 4600 Series |
| 3. Safety in the Poultry Products Industry | (3,9,10) | 8694-A,8696-A & B<br>A-3 References |
| 4. Pest Management Practices | (11) | 0418,8655-B,8822-C & E<br>A-4 References |
| **B. Identify Poultry Products** | | |
| 1. Wholesale and Retail Poultry Products | (1,10) | 0414,0417,0418,4001<br>4030,5037,8659-B |
| 2. Poultry By-Products | (1,7,10) | 0414,0417,0418,8662 |
| 3. Value-Added Products | (1,10) | 0414,0417,0418,4001<br>4030,5121,5140,8659-B |
| **C. Recognize Procedures Involved in Marketing Poultry Products** | | |
| 1. Pricing, Labeling, and Displaying Poultry Products | (6,8,9,10) | 0414,0417<br>8661-B,8663-C<br>C-1 References |
| 2. Trends in Supply and Demand of Poultry Products | (8,9,10) | 8409,8642-B<br>8653-B,8663-C<br>C-2 References |
| 3. Convenience Foods and Consumer Preference | (8,9,10) | 8663-C,8667-D<br>C-3 References |
| 4. Poultry Product Markets | (8,9,10) | 8714-A thru G<br>C-4 References |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630237 - POULTRY PRODUCTS EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Analyze Poultry Product Inspection** | | |
| 1. Inspection Standards for the Poultry Industry | (2,6,9,10) | 0414,0417 |
| 2. USDA Inspection of Poultry Products | (2,6,9,10) | 0414,0417 |
| 3. Evaluating and Grading Poultry Products | (2,6,9,10) | 0413,0414,0417<br>0418,4001,4030<br>5036B,5121,5137<br>5138,5140,8663-B |
| **E. Recognize Nutritive Value of Poultry Products** | | |
| 1. Nutritive Value of Poultry Products | (1,10) | 0414,0417,8654<br>E-1 References |
| 2. Uses of Poultry Products | (1,10) | 0414,0417,0418 |
| 3. Cooking and Other Preparation Qualities of Poultry Products | (1,10) | 0414,0417<br>E-3 References |
| **F. Evaluate the Processes of Merchandising Poultry Products** | | |
| 1. Purchases and Sales of Live Poultry | (6,8,9,10) | 4776,8667-C |
| 2. Purchases and Sales of Processed Poultry Products | (6,8,9,10) | 4776,8667-C<br>F-2 References |
| 3. Shipping and Receiving Poultry Products | (6,8,9,10) | 8667-C |
| **G. Describe Methods of Packaging and Labeling Poultry Products** | | |
| 1. Packaging Poultry Products | (6,9,10) | 0414,0417,8661-B<br>G-1 References |
| 2. Labeling Poultry Products | (6,9,10) | 0414,0417,8661-B<br>G-2 References |
| **H. Identify Methods of Fabricating Poultry Products** | | |
| 1. Manufacturing Poultry Products | (6,9,10) | 5035,H-1 References |
| 2. Preserving Poultry Products | (6,9,10) | H-2 References |

## ADDITIONAL REFERENCES

Suggested Textbooks for this occupational area include but are not limited to:

Barrick, R.K. & Hobart L. Harmon. Animal Production and Management, McGraw-Hill Book Company: Dallas, TX.
Donahue, Roy L. & James E. Christiansen. Exploring Agriculture: An Introduction to Food and Agriculture, Prentice-Hall, Inc.: Englewood Cliffs, NJ.
Ensminger, M.E. Animal Science Digest, Interstate Printers & Publishers, Inc.: Danville, IL.
Ensminger, M.E. & C.G. Olentine, Jr. Feeds & Nutrition - Abridged, The Ensminger Publishing Company: Clovis, CA.
Gillespie, James R. Modern Livestock & Poultry Production, Delmar Publishers Inc: USA.
Hoover, N.K. Handbook of Agricultural Occupations, Interstate Printers & Publishers, Inc.: Danville, IL.
Kingston, Mike (Editor). Texas Almanac, (reference to sections in agriculture and statistical data), A.H. Belo Corporation: Dallas, TX. (available by purchase from Gulf Publishing Company, P.O. Box 2608, Houston, Texas 77252; Phone AC 713/520-4444).
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).
Smith, D.T. (Editor). 1990 Yearbook of Agriculture: Americans in Agriculture - Portraits of Diversity, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

A-1 References:
L-1449, "Odor Regulation by Nuisance Laws," TAEX
MP-1012, "Resources Available to Stop Pollution," TAEX

A-3 References:
L-0427, "¡ Cuidado con los Venenos ! (Safety First with Insecticides)," TAEX
L-1026, "Use Pesticides Safely," TAEX
L-1135, "Exposicion a Pesticides ... Medidas Protectoras (Protective Measures for Pesticide Exposure)," TAEX
L-1167, "Pesticide Exposure - Protective Measures," TAEX
L-2039, "Poison Perils Checklist," TAEX
L-2087, "Texas Poison Control Centers," TAEX
L-2282, "Proper Usage of Drugs and Chemicals in Food Animals," TAEX
MP-0437, "Safe Use of Chemicals in Agriculture," TAEX
MP-1289, "Using Pesticides: Private Applicator Manual," TAEX

ADDITIONAL REFERENCES - Continued

A-4 References:
B-1378, "A Statewide Pest Management Plan for Texas," TAEX
B-1536, "Fire Ants and Their Control," TAEX
L-1744, "Mosquito Pests of Man and Animals," TAEX
L-1900, "Controlling Rats and Mice with Anticoagulants," TAEX
L-1900-S, "Como Controlar Ratas y Ratones con Anticoagulantes (Controlling Rats and Mice with Anticoagulants)," TAEX
L-1916, "Control of Rats and Mice," TAEX
L-1916-S, "El control de Ratas y Ratones (Control of Rats and Mice)," TAEX
L-2089, "Fly Control Around the House," TAEX

C-1 References:
L-1079, "Food Packaging and Labeling Can Help You Shop," TAEX
L-1741, "Food Protein Cost," TAEX
L-2290, "Cost and Yield Comparisons of Ready-to-Cook Chicken Products," TAEX

C-2 References:
L-2092, "Food Facts and Fallacies," TAEX
Various references on trends in the poultry product industry are available from the Texas Department of Agriculture, Austin, Texas.

C-3 References:
L-1797, "Boneless Breast of Chicken," TAEX
L-1798, "Chicken Cut-up: Family Style," TAEX
L-1799, "Chicken Cut-up: Commercial Style," TAEX
L-2092, "Food Facts and Fallacies," TAEX

C-4 References:
B-1609, "Federal Agricultural Marketing Programs," TAEX

E-1 References:
B-1413, "Nutritive Value of Foods," TAEX
L-2092, "Food Facts and Fallacies," TAEX

E-3 References:
B-1387, "Upland Game Birds - Cooking Care," TAEX
L-1707, "Carving the Family Turkey," TAEX

ADDITIONAL REFERENCES - Continued

F-2 References:
B-1573, "Tender Texas Chicken: The Natural Light Meat," TAEX
L-1108, "Be a Smart Shopper about False Advertising," TAEX
L-1111, "Be a Smart Shopper about Consumer Complaints," TAEX
L-1112, "Be a Smart Shopper about Guarantees," TAEX
L-1298, "Vamos a Comprar Aves," (Let's Buy Poultry)," TAEX
L-1415, "Purchasing and Using Turkey Products," TAEX
L-1482, "Turkey Tips ... Smart on Sales Series," TAEX

G-1 References:
L-1079, "Food Packaging and Labeling Can Help You Shop," TAEX
L-1797, "Boneless Breast of Chicken," TAEX
L-1798, "Chicken Cut-up: Family Style," TAEX
L-1799, "Chicken Cut-up: Commercial Style," TAEX

G-2 References:
L-1079, "Food Packaging and Labeling Can Help You Shop," TAEX

H-1 References:
B-1383, "Processing Poultry at Home," TAEX
B-1605, "Broiler Chicken Deboning," TAEX

H-2 References:
L-1664, "Curing and Smoking Poultry," TAEX

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630244 - VETERINARY ASSISTANT

Training as a Veterinary Assistant is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved veterinarian training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the veterinary assistant curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the veterinary medicine field;
(2) understand office management procedures;
(3) understand kennel and cage management;
(4) assist with examination and treatment of animals;
(5) understand human and animal health;
(6) recognize the principles of disease control;
(7) recognize the methods of disease control;
(8) understand sterilization and disinfection procedures;
(9) assist with restraint of animals;
(10) provide professional assistance;
(11) perform the duties of laboratory aides;
(12) recognize clinical signs of common diseases;
(13) understand animal nutrition;
(14) perform other duties related to a veterinary clinic;
(15) assist with research problems;
(16) develop and practice positive customer relationships; and
(17) develop an awareness of state and federal drug regulations.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630244 - VETERINARY ASSISTANT

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Conduct Office Management Procedures** | | |
| 1. The Communication Process | (2,14,16) | 8741-A |
| 2. Listening | (2,14,16) | 8741-F |
| 3. Decision Making | (2,14,16) | 8742-C |
| 4. Problem Solving | (2,14,16) | 8742-D |
| 5. Management Roles and Functions | (2,14,16) | 8706-B |
| 6. Assessing Personal Business Skills | (2,14,16) | 8756-A |
| 7. Accounting | (2,14,16) | 8709-B |
| 8. Use and Selection of Computers-Agribusiness | (2,14,16) | 8715-A |
| **B. Practice Human and Animal Health and Safety** | | |
| 1. Research in Animal and Food Science Technology | (1,5,17) | 8823-C |
| 2. Chemicals for Sanitation in the Food Industry | (1,5,17) | 8655-C |
| 3. USDA Inspection of Beef, Pork, Lamb, and Poultry | (1,5,14,17) | 0418-2,8657 |
| 4. Animal Welfare and Animal Rights | (1,5,14,17) | 8823-B |
| 5. First Aid for Horses | (1,5,14) | 8896-B |
| 6. Diseases Transmitted from Animals to Humans | (1,5,17) | Resource #1 |
| **C. Utilize Sterilization and Disinfection Procedures** | | |
| 1. Sterilization Techniques | (8,14) | Reference #1 |
| 2. Preparing the Hands and Field of Operation | (8,14) | Reference #1 |
| 3. Sterile Gloves, Gown, and Instruments | (8,14) | Reference #1 |
| **D. Demonstrate Kennel, Cage, and Facilities Management** | | |
| 1. Patient Care | (3) | Resource #1 |
| 2. Cleaning and Disinfecting Facilities | (3) | 8337,Resource #1 |
| 3. Animal Bedding | (3) | Reference #2 |
| 4. Electrical Wiring | (14) | 4630,8107,8602-B,9570,9595 |
| 5. Pipe, Plumbing, and Water Systems | (14) | 4630,8603,9571 |
| 6. Perform Basic Skills in Agricultural Construction | (14) | 4630,8412,9566 |
| 7. Residential Pest Control | (14) | 4630,8621-C |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Demonstrate Kennel, Cage, and Facilities Management - Continued** | | |
| 8. Planning for Painting-Preparing Surfaces-Applying Paint | (14) | 4630,8621-A |
| 9. Safe Application of Chemicals on Plants | (14) | 8860-B |
| 10. Placing, Reinforcing, Finishing, and Curing Concrete | (14) | 4606,4607,4608,4618,8604-B |
| 11. Fence, Pen, and Chute Maintenance | (14) | Reference #2 |
| **E. Identify Clinical Signs of Common Diseases, Principles, and Methods of Disease Control** | | |
| 1. Role of Bacteria, Fungi, Virus, and Nutrition in Causing Animal Diseases | (6,7,12) | 8341,Reference #10 |
| 2. Causes, Symptoms, Prevention, and Treatment of Various Animal Diseases | (6,7,12) | 4040,8341,8822-B 8896-E,Reference #10 |
| 3. External and Internal Parasites of Poultry and Rabbits | (6,7,12) | 8340,Reference #10 |
| 4. External and Internal Parasites of Livestock | (6,7,12) | 4039,8822-D 8896-D,Reference #10 |
| 5. Use of Pharmaceuticals in Vaccination and Immunization | (6,7,12) | 4039,8645-E,8822-E |
| **F. Demonstrate Animal Restraint Techniques** | | |
| 1. Safe Handling and Restraint of Animals | (9) | 0219,8645-A |
| 2. Animal Behavior | (9) | 0219,8817-C |
| 3. Small Animal Restraint | (9) | 0219,Resource #1 |
| 4. Large Animal Restraint | (9) | 0219,Resource #1 |
| **G. Assist with Examinations and Treatments** | | |
| 1. Terminology | (10,14) | Resource #1 |
| 2. Livestock Transportation | (10,14) | 8645-G,9531 |
| 3. Animal Breeds | (10,14) | 5001A,5018,5019,5020,5021 5022,5023,8348,8393,8394 8395,8396,8397,8398 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING

ACT #11630244 - VETERINARY ASSISTANT

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **G. Assist with Examinations and Treatments - Continued** | | |
| 4. Performing Common Immunization Skills | (10,14) | 8645-E |
| 5. Surgical Skills - Castration | (10,14) | 8645-B |
| 6. Surgical Skills - Dehorning | (10,14) | 8645-C |
| 7. Surgical Skills - Docking | (10,14) | 8645-D |
| 8. Marking and Identification of Animals | (10,14) | 8645-F,9739,9740 |
| **H. Provide Professional Assistance to the Veterinarian** | | |
| 1. The Circulatory System | (10,14) | 8646-A |
| 2. The Respiratory System | (10,14) | 8646-B |
| 3. The Skeletal System | (10,14) | 8646-C |
| 4. The Muscular System | (10,14) | 8646-D |
| 5. The Digestive System | (10,14) | 8646-E |
| 6. Animal Reproduction | (10,14) | 8348,8405,9520 9521,9527,9528,9532 |
| 7. Artificial Insemination | (10,14) | 8818-A |
| 8. Embryo Transfer | (10,14) | 8818-B |
| 9. Pregnancy Diagnosis (Palpation) | (10,14) | 8818-C |
| 10. Care of Livestock at Parturition | (10,14) | 8818-D,9611 |
| 11. Anatomy and Physiology of Other Animal Body Systems - The Nervous, Urinary, and Endocrine Systems | (10,14) | 8817-B |
| 12. The Exterior, Nervous, Urinary, and Endocrine Systems of Domestic Animals | (10,14) | 8646-F |
| 13. Animal Growth and Development | (10,14) | 8391 |
| 14. Anatomy and Physiology of Animals | (10,14) | 8392 |
| 15. X-Ray Equipment, Use, and Film Development | (10,14) | Reference #3 |
| 16. Surgical Instrument Identification and Terminology | (10,14) | References #1,#4 |
| 17. Surgery Preparation and Procedures | (10,14) | Reference #1 |
| 18. Anesthesia Equipment and Operation | (10,14) | References #1,#5 |
| 19. Handling, Care, and Administration of Drugs | (10,14) | References #6,#7 |
| 20. Post-Mortem Examinations | (10,14) | Resource #1 |
| 21. Animal Genetics | (10,14) | 8406 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **I. Demonstrate Skill in Conducting Laboratory Tests** | | |
| 1. Bacteriology Tests | (11,14) | Resource #1 |
| 2. Fecal Examinations | (11,14) | Reference #8 |
| 3. Urine Examinations | (11,14) | Reference #9 |
| **J. Determine Animal Nutritional Requirements of Domestic Animals** | | |
| 1. Feed Nutrients | (13) | 8647-A |
| 2. Classes of Feeds | (13) | 8647-B |
| 3. Feed Additives | (13) | 8647-C |
| 4. Formulating Rations for Domestic Animals | (13) | 8821-B |
| 5. Quality of Commercially Prepared Feeds | (13) | 8821-C |
| 6. Feeding Practices of Beef, Swine, and Sheep | (13) | 8348,8821-D |

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REFERENCES

Reference #1 - TEXT — Slatter, Douglas H. Textbook of Small Animal Surgery. (Current Edition.) W.B. Saunders Company; Philadelphia, PA, 19106.

Reference #2 - TEXT — Ensminger, M.E. The Stockman's Handbook. (Current Edition.) The Interstate Printers and Publishers, Inc.; Danville, IL.

Reference #3 - TEXT — Fundamentals of Radiology. (Current Edition.) Eastman Kodak Co. Health Sciences Markets Division, Rochester, NY, 14650.

Reference #4 — Surgical Instrument Reference Guide for Veterinarians. Solvay Veterinary, Inc. Solvay Veterinary Supplies, P.O. Box 7348, Princeton, NJ, 08543.

Reference #5 - TEXT — Kirk, Robert W., Stephen I. Bistner, and Richard B. Ford. Handbook of Veterinary Procedures and Emergency Treatment. (Current Edition.) W.B. Sanders Co.; Philadelphia, PA, 19106.

REFERENCES - Continued


| | |
|---|---|
| Reference #6 - TEXT | Plumb, David C. Veterinary Pharmacy Formulary. (Current Edition.) Pharmacy Department, Veterinary Teaching Hospital, University of Minnesota, 1365 Gortner Ave., St. Paul, MN, 55108. |
| Reference #7 | Talbot, Richard B. Veterinary Pharmaceuticals and Biologicals. (Current Edition.) Veterinary Medicine Publishing Co., Lenexa Dr., Lenexa, KS, 66215. |
| Reference #8 - TEXT | Sloss, Margaret W., Veterinary Clinical Parasitology. (Current Edition.) Iowa State University Press, Ames, IA, 50010. |
| Reference #9 - TEXT | Osborne, Carl, and Jerry Stevens. Handbook of Canine and Feline Urinalysis. (Current Edition.) Ralston Purina Co., Checkerboard Square, St. Louis, MO, 63188. |
| Reference #10 - TEXT | Gillespie, James R. Modern Livestock and Poultry Production. (Current Edition.) Delmar Publishers, Inc. |
| Resource #1 | Your local veterinarian(s). |

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630245 - AGRICULTURAL CHEMICALS SALES AND SERVICE EMPLOYEE

Training in Agricultural Chemicals Sales and Service is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural chemical sales and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural chemicals sales and service curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand early developments in agricultural chemicals and their importance to animal and plant life;
(2) understand federal and state laws;
(3) understand the computation of dilutions and the use of application equipment;
(4) understand plant ecology;
(5) recognize classes of insects;
(6) understand the classification and use of insecticides;
(7) understand the control of fungi;
(8) understand the control of bacteria;
(9) understand the control of nematodes;
(10) recognize chemicals used in the control of rodents and predators;
(11) understand the physiological principles, classifications, properties, and characteristics of herbicides;
(12) determine method of treatment, application, preparation, and herbicide selection;
(13) determine the use of fertilizers;
(14) determine the use and application of harvest-aid chemicals;
(15) determine the use and application of chemicals used as plant regulators;
(16) determine the use and application of agricultural non-crop chemicals;
(17) recognize pollution caused by agricultural chemicals in water, atmosphere, and in the soil (residues);
(18) identify sound business management practices;
(19) practice safety with and around chemicals;
(20) understand the control of additional pests; and
(21) identify occupations within the chemical industry.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630245 - AGRICULTURAL CHEMICALS SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT MATERIALS |
|---|---|---|
| **A. Importance of the Agricultural Chemical Industry** | | |
| 1. Texas Agricultural Chemical Industry | (1) | Resource #1 |
| 2. Use of Fertilizers and Pesticides | (1) | 4303,4320,4597 |
| 3. Nonchemical Alternatives | (1) | 4303,4320,4597 |
| 4. Chemical Use and Environmental Safety | (1,2,17) | 4303,4320,4597 |
| 5. Federal and State Chemical Use Legislation | (1,2) | 4303 |
| 6. Occupational Opportunities in the Agricultural Chemical Industry | (21) | 1050 |
| **B. Organization and Function of Business** | | |
| 1. Establishing a Budget for Business | (18) | 8708-B,8708-C,8708-D |
| 2. Managing Business Records | (18) | 8709-A,8709-B,8709-C,8709-D 8709-E,8709-F,8709-H,8709-I,4773 |
| 3. Taxes and Social Security | (18) | 8709-G |
| 4. Capital Resources | (18) | 8710-A,8710-B,8710-C,8710-D,8710-E |
| 5. Business Risk Management | (18) | 8712-A,8712-B |
| 6. Legal Activities in Business Operations | (18) | 8711-A,8711-B,8711-C |
| 7. Salesmanship | (18) | 4776 |
| 8. Computers in Business | (18) | 4771,4772, 4774,4775,8728-A 8728-B,8728-C |
| **C. Safety With Chemicals** | | |
| 1. Types of Pesticide Exposure | (19) | 4303,4320,4597 |
| 2. Protective Clothing and Devices | (19) | 4303,4320,4597 |
| 3. Avoiding Accidents | (19) | 4303,4320,4597 |
| 4. Pesticide Poisoning, Emergencies, and First Aid | (19) | 4303,4320,4597 |
| 5. Toxicity and Persistence of Pesticides | (19) | 4303,4320,4597 |
| 6. Chemical Storage | (19) | 4303,4320,4597 |
| 7. Disposal of Unused Chemicals and Empty Containers | (19) | 4303,4320,4597 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630245 - AGRICULTURAL CHEMICALS SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT MATERIALS |
|---|---|---|
| **D. Chemical Application and Equipment** | | |
| 1. Commercially Prepared Chemicals | (3) | 4303,4320,4597 |
| 2. Sprayer Type and Size | (3) | 4303,4320,4533,4597 |
| 3. Grandular Equipment Type and Size | (3) | 4303,4320,4597 |
| 4. Dusters, Aerosols, Foggers, and Aerial Applicators | (3) | 4303,4320,4597 |
| 5. Calibration of Chemical Equipment | (3) | 4303,4320,4597 |
| **E. Recognizing and Controlling Pests** | | |
| 1. Identifying and Controlling Insects | (5,6) | 4303,4320 |
| 2. Identifying and Controlling Mites, Ticks, and Spiders | (20) | 4303,4320 |
| 3. Identifying and Controlling Snails and Slugs | (20) | 4303,4320 |
| 4. Identifying and Controlling Fungi, Bacteria, and Nematodes | (7,8,9) | 4303,4320 |
| 5. Identifying and Controlling Rodents | (10) | 4303,4320 |
| **F. Plants in an Ecological Environment** | | |
| 1. Plant Structure and Physiology | (4) | 8384 |
| 2. Photosynthesis | (4) | 8858-A |
| 3. Sexual and Asexual Reproduction of Plants | (4) | 8388 |
| 4. Fertilizer Use and Application | (13) | 8636-B,8636-C,8640-A,8640-B,8640-C |
| 5. Plant Growth Regulator Use and Application | (14) | 4303,4320 |
| 6. Weed Control | (4,11,12) | 4303,4320 |
| **G. Chemical Classification, Use, and Application** | | |
| 1. Classification of Pesticides | (6) | 4303,4320 |
| 2. Use and Application of Pesticides | (6) | 4303,4320,8641-C,8860-B,8860-C |
| 3. Classification of Herbicides | (11,15) | 4303,4320 |
| 4. Use and Application of Herbicides | (11,15) | 4303,4320,8641-C,8860-B |
| 5. Agricultural Non-Crop Chemicals | (16) | 4303,4320 |
| 6. Private Applicator Certification | (21) | Reference #1 |

## REFERENCES

Reference #1 MP-1289, Using Pesticides: Private Applicator Manual.

Resource #1 A manager or representative of a local agricultural chemical retail outlet.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630246 - FEED SALES AND SERVICE EMPLOYEE

Training in Feed Sales and Service is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved feed sales and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the feed sales and service curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the feed industry;
(2) understand the organization and function of a business;
(3) apply accepted business procedures;
(4) define the functions of feed as related to animal nutrition;
(5) understand and interpret the regulations governing labeling and formulations of feeds;
(6) understand anatomy and functioning of the digestive system;
(7) formulate balanced rations for various classes of animals;
(8) explain the use of supplemental feeding as a part of range management practices;
(9) relate animal nutrition to sanitation and health practices;
(10) discuss the need to recognize, treat, and control nutritional diseases;
(11) identify the components and classes of feeds;
(12) identify environmentally safe rodent control practices;
(13) identify safe chemical use practices on and around feeds;
(14) recommend appropriate products, according to customer needs; and
(15) identify occupations within the feed industry.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630246 - FEED SALES AND SERVICE EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT MATERIALS |
|---|---|---|
| **A. Importance of the Feed Industry** | | |
| 1. Texas Cattle Feeding Industry | (1) | Reference #19 |
| 2. Economy in Feeding Livestock | (1) | Reference #22 |
| 3. Occupational Opportunities in the Feed Industry | (15) | 1050 |
| **B. Organization and Function of Business** | | |
| 1. Establishing a Budget for Business | (2,3) | 8708-B,8708-C,8708-D |
| 2. Managing Business Records | (2,3) | 8709-A,8709-B,8709-C,8709-D 8709-E,8709-F,8709-H,8709-I,4773 |
| 3. Taxes and Social Security | (2,3) | 8709-G |
| 4. Capital Resources | (2,3) | 8710-A,8710-B,8710-C,8710-D,8710-E |
| 5. Business Risk Management | (2,3) | 8712-A,8712-B |
| 6. Legal Activities in Business Operations | (2,3) | 8711-A,8711-B,8711-C |
| 7. Salesmanship | (2,3) | 4776 |
| 8. Computers in Business | (2,3) | 4771,4772,4774,4775,8728-A 8728-B,8728-C |
| **C. Functions of Feed as Related to Animal Nutrition** | | |
| 1. Feed Nutrients | (4,11,14) | 8647-A,8895-C,Reference #22 Reference #2, #22, #23 |
| 2. Classes of Feed | (4,11,14) | 8647-B,8895-B Reference #22, #23 |
| 3. Feed Additives | (4,11,14) | 8647-C,Reference #22, #23 |
| 4. Poultry Nutrition | (4) | 418 |
| 5. Rabbit Nutrition | (4) | 8339 |
| 6. Growth Implants | (4) | Reference #6 |
| **D. Regulations Governing Labeling and Formulations** | | |
| 1. Commercially Prepared Feeds | (5) | 8821-C |
| 2. Feed Labels | (5) | Reference #15 |

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| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT REFERENCES |
|---|---|---|
| **E. Anatomy and Functioning of the Digestive System** | | |
| 1. Ruminant Digestion | (6) | 8646-E,8833-C,Reference #22, #23 |
| 2. Non-ruminant Digestion | (6) | 8646-E,8833-C,8895-A Reference #22, #23 |
| 3. Poultry | (6) | 418,8646-E,8833-C Reference #22, #23 |
| **F. Rations for Various Classes of Animals** | | |
| 1. Feeding Practices | (7,14) | 8339,8821-D,Reference #22, #23 |
| 2. Formulating Rations | (7,14) | 8821-B,Reference #22, #23 |
| 3. Equine Rations | (7,14) | 8895-D,8895-E,9590 Reference #23 |
| 4. Poultry Rations | (7,14) | 0418-2,References #18 & #23 |
| **G. Supplemental Feeding as a Part of Range Management Practices** | | |
| 1. Nutritional Needs of Livestock on Rangeland | (8,14) | 8874-A,Reference #20, #23 |
| 2. Feeding and Storing Hay | (8,14) | Reference #4 |
| 3. Range Management Techniques | (8,14) | 8874-B,Reference #5 |
| 4. Feeding Mineral Supplements | (8,14) | Reference #17 |
| 5. Nutritive Value of Soil | (8,14) | Reference #21 |
| **H. Sanitation and Health Practices** | | |
| 1. Handling and Restraint of Animals | (9,14) | 0219,8645-A |
| 2. First Aid Principles | (9,14) | 8896-B |
| 3. Injection Procedures | (9,14) | 8645-E,8822-E |
| 4. Handling and Caring for Drugs | (9,14) | 8822-E |
| 5. Preparing and Using Pesticides, Sprays, and Dips | (9,14) | 4303,4319,4320,8860-B |
| 6. Poisonous Plants | (9,14) | Reference #23 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630246 - FEED SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT REFERENCES |
|---|---|---|
| **I. Nutritional Diseases** | | |
| 1. Nutritional and Animal Diseases | (10,14) | 8822-A,8822-B,Reference #22, #23 |
| 2. Causes of Diseases | (10,14) | Reference #22, #23 |
| 3. Feeding Management | (10,14) | Reference #22, #23 |
| 4. Poisonous Plants and Poisonous Feeds | (10,14) | Reference #22 |
| 5. Nutritional Related Reproductive Problems | (10,14) | Reference #22, #23 |
| **J. Pest Control Practices** | | |
| 1. Insect Control | (12,14) | Reference #3 |
| 2. Rodent Control | (12,14) | Reference #6, #7 |
| 3. Avian Control | (12,14) | Reference #8,#9, #10 |
| 4. Animal Damage Control Services | (12,14) | Reference #3 |
| 5. Using Chemicals | (13,14) | 8860-B,8860-C Reference #12,#13,#14 |

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## REFERENCES


Reference #1 B-1553, "Nutrient Composition of Feeds," Texas Agricultural Extension Service.

Reference #2 B-1552, "Nutrient Requirements of Beef Cattle," Texas Agricultural Extension Service.

Reference #3 B-1410, "Suggestions for Controlling Insects in Farm-Stored Grain," Texas Agricultural Extension Service.

Reference #4 L-2201, "Feeding and Storing Hay," Texas Agricultural Extension Service.

Reference #5 MP-965, "Keys to Profitable Range Management," Texas Agricultural Extension Service.

Reference #6 L-1916, "Control of Rats and Mice," Texas Agricultural Extension Service.

Reference #7 L-1900, "Controlling Rats and Mice With Anticoagulants," Texas Agricultural Extension Service.

Reference #8 L-1919, "Controlling Feral Pigeons," Texas Agricultural Extension Service.

Reference #9 L-1920, "Controlling House Sparrows," Texas Agricultural Extension Service.

Reference #10 L-1921, "Controlling Roosting Birds in Urban Areas," Texas Agricultural Extension Service.

Reference #11 L-1915, "The Texas Animal Damage Control Service," Texas Agricultural Extension Service.

Reference #12 L-1167, "Pesticide Exposure - Protective Measures," Texas Agricultural Extension Service.

Reference #13 L-2039, "Poison Perils Checklist," Texas Agricultural Extension Service.

Reference #14 L-2087, "Texas Poison Control Centers," Texas Agricultural Extension Service.

Reference #15 L-2163, "Feed Label Information," Texas Agricultural Extension Service.

Reference #16 L-2291, "Beef Cattle Implants," Texas Agricultural Extension Service.

Reference #17 L-2213, "Mineral Recommendations for Pastured Beef Cattle in Texas," Texas Agricultural Extension Service.

Reference #18 L-595, "Managing and Feeding Egg Strain Replacement Pullets," Texas Agricultural Extension Service.

Reference #19 B-1495, "The Texas Cattle Feeding Industry, Operation, Management, and Cost," Texas Agricultural Extension Service.

Reference #20 B-1357, "Nutritional Value of Range Plants in the Edwards Plateau Region of Texas," Texas Agricultural Extension Service.

Reference #21 L-1054, "Native Nutrient Status of Texas Soils," Texas Agricultural Extension Service.

Reference #22 Morrison, Frank B. Feeds and Feeding. The Morrison Publishing Company: Current Edition.

Reference #23 Gillespie, James R. Modern Livestock and Poultry Production. Delmar Publishers, Inc.: Current Edition

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630248 - AGRICULTURAL MACHINERY PARTS EMPLOYEE

Training as an Agricultural Machinery Parts Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved agricultural machinery parts training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the agricultural machinery parts employee curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of agricultural machinery to American agriculture;
(2) recognize and practice safety procedures that apply to working with and around agricultural machinery and supplies;
(3) identify component parts of agricultural machinery;
(4) comprehend basic technical knowledge and skills involving terminology, mathematical computations, and application of the principles of engine and agricultural machinery operation;
(5) learn and use effective warehousing, merchandising, and inventory control procedures;
(6) demonstrate invoicing, recordkeeping, and pricing procedures;
(7) collect payment for sales by cash, check, and charge methods;
(8) learn and use procedures for locating parts numbers utilizing application charts, parts catalog, microfiche readers, and computer terminals;
(9) learn and use proper sales techniques;
(10) develop effective oral and written communication and public relations skills; and
(11) develop good work habits and attitudes.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630248 - AGRICULTURAL MACHINERY PARTS EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Safety, Agricultural Mechanics, and American Agriculture** | | |
| 1. Importance of Agricultural Mechanics to American Agriculture | (1,2) | 8220-A |
| 2. Understanding and Applying Safe Work Practices and Lab Management | (1,2) | 8201-A,8600,8780-B,8790 |
| **B. Principles of Operation and Maintenance of Agricultural Machinery** | | |
| 1. Identification and Maintenance of Agricultural Machinery Component Parts and Systems | (3,4) | 8221-A,8792-A,B,C,8201-B |
| 2. Operation and Service of Agricultural Machinery Component Parts and Systems | (3,4) | 8202-A & B,8203-A & B,8209-A,8211-A 8204-A,8205-A,8206-A,8207-A |
| 3. Repair and Reconditioning of Agricultural Machinery | (3,4) | 8212-A,8206-B |
| **C. Development of Business Management and Recordkeeping Skills** | | |
| 1. Management Information Systems | (5,6,7) | Reference #1,4776,8709-A |
| 2. Principles of Accounting | (5,6,7) | Reference #1,8709-B |
| **D. Locating Parts Numbers and Application Information** | | |
| 1. Use of Application Charts, Parts Catalogs, and Service Manuals | (5,8) | Reference #2 |
| 2. Use of Microfiche, Microfiche Readers, and Computerized Parts Catalogs and Information Systems | (5,8) | 4775,Reference #2 |
| **E. Development of Sales and Marketing Techniques** | | |
| 1. Sales Techniques | (6,9) | 4776,8740-E,8753-B |
| 2. Merchandising and Advertising | (6,9) | 4776,Reference #1 |

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| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **F. Development of Interpersonal Skills and Worker Relationships** | | |
| 1. Formulating Professional and Ethical Work Habits | (10,11) | 8372-A |
| 2. Use Proper Etiquette and Behavior | (10,11) | 8732-B,8737-C |
| 3. Communication and Problem-Solving Skills | (10,11) | 8741-A to F,8742-D |
| 4. Working With Diverse Groups and Co-Workers | (10,11) | 8741-G,8739-D |

## REFERENCES

Reference #1 Introduction to Agriculture Sales and Service. Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, Stillwater, OK.

Reference #2 Auto Parks Clerk: Student Activities Package. (IMS# 01631), Instructional Materials Service, Trade and Industrial Education

## ADDITIONAL REFERENCES AND MATERIALS

**Texts/Handbooks:**

(IMS# 4521) Fundamentals of Machine Operation - Preventive Maintenance. Deere and Co., Moline, IL.
(IMS# 4533) Fundamentals of Service - Mowing and Spraying Equipment. Deere and Co., Moline, IL.
(IMS# 4597) Fundamentals of Machine Operation - Agricultural Machinery Safety. Deere and Co., Moline, IL.
(IMS# 4600) Fundamentals of Machine Operation - Tractors. Deere and Co., Moline, IL.
(IMS# 4601) Fundamentals of Machine Operation - Tillage. Deere and Co., Moline, IL.
(IMS# 4602) Fundamentals of Machine Operation - Planting. Deere and Co., Moline, IL.
(IMS# 4603) Fundamentals of Machine Operation - Hay and Forage Harvesting. Deere and Co., Moline, IL.
(IMS# 4612) Fundamentals of Service - Identification of Part Failures. Deere and Co., Moline, IL.

**Videos:**

(IMS# 9792) "Tractor Safety"
(IMS# 9793) "Diesel Engine Maintenance"

## AGRICULTURAL COOPERATIVE TRAINING - 501
## ACT #11630249 - SEED SALES AND SERVICE EMPLOYEE

Training as a Seed Sales and Service Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved seed sales and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the seed sales and service employee curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize importance of seed industry;
(2) perform salesmanship skills;
(3) perform telephone courtesy;
(4) learn to meet customers;
(5) learn business procedures, such as:
  (a) recordkeeping
  (b) business policies
  (c) selling price
  (d) sales tax
  (e) inventory
  (f) stock and merchandise planning;
(6) understand basic seed, plant, and soil science;
(7) relate seed production practices such as:
  (a) seeding depth
  (b) bed preparation
  (c) planting rates
  (d) fertilizer needs
  (e) insect and disease control;
(8) classify, sample, and otherwise maintain seed quality control;
(9) perform processing and warehouse management skills;
(10) select properly adapted varieties of seed;
(11) identify and maintain plant and cropping equipment through sanitation procedures and equipment repair; and
(12) practice safe working habits.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630249 - SEED SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT REFERENCES |
|---|---|---|
| **A. Importance of the Seed Industry** | | |
| 1. Texas Seed Industry | (1) | 8637-A |
| 2. Seed Industry Effects on the Economy | (1) | 8637-A,8637-B |
| 3. Occupational Opportunities in the Seed Industry | (13) | 1050,9025,9029 |
| **B. Organization and Function of Business** | | |
| 1. Establishing a Budget for Business | (5) | 8708-B,8708-C,8708-D |
| 2. Managing Business Records | (5) | 8709-A,8709-B,8709-C,8709-D 8709-E,8709-F,8709-H,8709-I,4773 |
| 3. Taxes and Social Security | (5) | 8709-G |
| 4. Capital Resources | (5) | 8710-A,8710-B,8710-C,8710-D,8710-E |
| 5. Business Risk Management | (5) | 8712-A,8712-B |
| 6. Legal Activities in Business Operations | (5) | 8711-A,8711-B,8711-C |
| 7. Salesmanship | (2,3,4) | 4776 |
| 8. Computers in Business | (5) | 4771,4772,4774,4775,8728-A 8728-B,8728-C |
| **C. Seed and Plant Physiology** | | |
| 1. Seed Physiology | (6) | 8385 |
| 2. Plant Physiology | (6) | 8384 |
| 3. Reproduction and Propagation | (6) | 8388 |
| 4. Genetics | (6) | 1060-C,8387,8389 |
| 5. Plant Nomenclature | (6) | 8390 |
| 6. Growth and Nutrition | (6) | 8385,8386,8640-A,8640-B |
| 7. Diseases and Insects of Plants | (6) | 8860-B,8860-C,8968-A,8968-D Reference #1 |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630249 - SEED SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT MATERIALS |
|---|---|---|
| **D. Seedstock Production** | | |
| 1. Planting Schedule | (7) | 1060-F,8859-A,8970-B |
| 2. Seedbed Preparation | (7) | 1060-F,8860-A |
| 3. Seeding Rates | (7) | 1060-F,8859-A |
| 4. Depth of Planting | (7) | 1060-F,8859-A,8970-B |
| 5. Soil Conditioning | (7) | 1060-F |
| 6. Maintaining Purity in Production Fields | (7) | 1060-F,8858-B,8512 |
| 7. Harvesting Seedstock | (7) | 1060-F,8970-A |
| **E. Quality Control of Seedstock** | | |
| 1. Seed Type Identification | (8) | 1060-B,1060-C |
| 2. Certified Seedstock | (8) | 1060-B,1060-C,Reference #3 |
| 3. Labeling Requirements | (8) | 1060-B,1060-C |
| 4. Seed Sampling and Purity Analysis | (8) | 1060-B,1060-C |
| 5. Seed Germination and Germination Testing | (8) | 1060-B,1060-C,8385,8930-C |
| **F. Processing, Storage, and Management of Seedstock** | | |
| 1. Treatment, Inoculation and Scarification | (9) | Reference #3, #4 |
| 2. Grading | (9) | Reference #4 |
| 3. Drying and Aeration | (9) | Reference #4 |
| 4. Weights and Quality | (9) | Reference #4 |
| 5. Moisture Content and Determining Shrinkage | (9) | Reference #4 |
| 6. Handling Seeds | (9) | Reference #4 |
| 7. Storage Rooms and Bins | (9) | 8970-A,Reference #3 |
| 8. Controlling Pests | (9) | 8860-B,8860-C,8931-H,8968-C |
| 9. Conditions for Proper Storage | (9) | Reference #4 |
| **G. Seed Types and Varieties** | | |
| 1. Small Grain Crop Seeds | (10) | Reference #3 |
| 2. Corn and Grain Sorghum Seed | (10) | Reference #3 |
| 3. Fiber Crop Seed | (10) | Reference #3 |
| 4. Forage Crop Seed | (10) | Reference #3 |
| 5. Flower and Vegetable Seed | (10) | 8964-C |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630249 - SEED SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT MATERIALS |
|---|---|---|
| **H. Seed Moving, Storage, and Processing Equipment** | | |
| 1. Small Gasoline Engines and Electrical Motors, Controls, and Safety | (11) | 8793-A,8795 |
| 2. Conveyors, Elevators, and Drying Equipment | (11) | 8791-A,8792-A |
| 3. Hydraulic Power | (11) | 8794-G,8796 |
| 4. Seed Processing Equipment | (11) | Reference #4 |
| 5. Safe Working Habits | (12) | 8790 |

REFERENCES


Reference #1 B-1140, "Texas Plant Disease Handbook"

Reference #2 Gillespie, James R. Modern Livestock and Poultry Production. Delmar Publishers, Inc.: Current Edition.

Reference #3 Bishop, D.D. et.al. Crop Science and Food Production. McGraw-Hill: Current Edition.

Reference #4 Copeland, L.O. and M.B. McDonald. Principles of Seed Science and Technology. Burgess Publishing Company: Minneapolis, Minnesota. Current Edition. (ISBN 0-8087-4849-1)

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630250 - FERTILIZER SALES AND SERVICE EMPLOYEE

Training as a Fertilizer Sales and Service Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved fertilizer sales and service training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the fertilizer sales and service employee curriculum guide recommend selected references available through the Instructional Materials Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the fertilizer industry;
(2) understand the role of an agricultural salesperson;
(3) understand the organization and function of a fertilizer supplier;
(4) use accepted business procedures;
(5) recognize types of soil and soil problems;
(6) describe the sources of fertilizer nutrients;
(7) define the function of plant food elements;
(8) recognize the forms of fertilizers;
(9) learn the special uses for fertilizers;
(10) understand the principles involved in the use of fertilizers;
(11) recognize the methods of applying fertilizers;
(12) understand the operation of fertilizer plant equipment and application equipment;
(13) take the precautions to prevent improper use of fertilizers;
(14) understand fertilizer and chemical regulations and control; and
(15) recommend appropriate products according to customer needs.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630250 - FERTILIZER SALES AND SERVICE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT REFERENCES |
|---|---|---|
| **A. Importance of the Fertilizer Industry** | | |
| 1. Development of the Fertilizer Industry | (1) | Reference #1, #3 |
| 2. Importance of Fertilizer to Production Agriculture | (1) | Reference #1, #4 |
| 3. State and Federal Regulations Concerning the Production and Use of Fertilizers | (1,14) | Reference #1 |
| 4. Occupational Opportunities in the Fertilizer Industry | (1) | #1050 |
| **B. Organization and Function of Business** | | |
| 1. Establishing a Budget for Business | (3,4) | 8708-B,8708-C,8708-D |
| 2. Managing Business Records | (3,4) | 8709-A,8709-B,8709-C,8709-D 8709-E,8709-F,8709-H,8709-I,4773 |
| 3. Taxes and Social Security | (3,4) | 8709-G |
| 4. Capital Resources | (3,4) | 8710-A,8710-B,8710-C,8710-D,8710-E |
| 5. Business Risk Management | (3,4) | 8712-A,8712-B |
| 6. Legal Activities in Business Operations | (3,4) | 8711-A,8711-B,8711-C |
| 7. Salesmanship | (2,3,15) | 4776,8735B |
| 8. Computers in Business | (4,3) | 4771,4772,4774,4775,8715-A 8728-A,8728-B,8728-C |
| **C. Outline the Effects of Fertilizer Use on the Environment** | | |
| 1. Nutrient Pollution | (13) | 8692-C |
| 2. The Clean Water Act | (13) | Reference #1 |
| 3. Management of Animal Wastes and Green Manures | (13) | 8692-C,Reference #2, #3 |
| 4. Safe Chemical Application | (13) | 8860-B,4320 |
| **D. Describe the Types and Forms of Fertilizers** | | |
| 1. Manufacturing of Fertilizer | (8) | Reference #1 |
| 2. Dry-Mixed Fertilizer | (8) | Reference #1 |
| 3. Fluid Fertilizers | (8) | Reference #1, #2 |
| 4. Organic Fertilizers | (8) | 8640-B,Reference #2, #3 |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | STUDENT REFERENCES |
|---|---|---|
| **E. Identify Soils and Soil Problems** | | |
| 1. Taking and Using Soil Samples to Determine Fertilizer Needs | (5,15) | 8853-B,Reference #1 |
| 2. Understanding Soil Test Results | (7,15) | 8853-B,Reference #2 |
| 3. Soil pH and Its Relationship to Crops Production | (5,15) | 8853-B |
| 4. Liming Soils | (5,15) | 8853-B |
| **F. Explain the Application of Fertilizers** | | |
| 1. Methods of Applying Fertilizer | (11) | 8640-C, Reference #2 |
| 2. Time of Fertilizer Application | (11) | 8640-C, Reference #2 |
| 3. Equipment Used for Applying Fertilizer | (12) | 8640-C |
| **G. Identify the Sources of Fertilizer Nutrients** | | |
| 1. Primary Plant Foods | (6) | 8640-B |
| 2. Secondary Plant Foods | (6) | 8640-B |
| 3. Micro Nutrients | (6) | 8640-B |
| **H. Describe the Functions and Special Uses of Plant Food Elements** | | |
| 1. Functions of Primary Nutrients for Crops | (7,9,10) | 8636-B |
| 2. Functions of Secondary Nutrients for Crops | (7,9,10) | 8636-B |
| 3. Fucntions of Micro Nutrients for Crops | (7,9,10) | 8636-B |
| 4. Fish Pond Fertilization | (7,9,10) | 0283 |
| 5. Lawn, Ornamental Plants, and Tree Fertilization | (7,9,10) | 8931-F,8953-B |
| 6. Fertilization in Greenhouse Production | (7,9,10) | 8931-F |

## REFERENCES

Reference #1 The Fertlizer Handbook. The Fertilizer Institute; Washington D. C.

Reference #2 Knuti, Leo; Williams, David; and Hide, J. C. Profitable Soil Management (Third Edition); Prentice-Hall Inc., Englewood Cliffs, N. J.

Reference #3 Donahue, Roy; Follet, Roy; and Tulloch, Rodney. Our Soils and Their Management (Fourth Edition); The Interstate Printers and Publishers Inc.; Danville, Illinois.

Reference #4 Texas Soil Fertility. Texas Agricultural Extension Service and the Texas Plant Food Institute.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630255 THROUGH #11630264 - HORTICULTURAL OCCUPATIONS

Training in Horticultural Occupations is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at approved horticulture-related training stations. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the horticultural occupations curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) understand greenhouse plant classification;
(2) identify greenhouse, ornamental, and nursery plants;
(3) identify bud, stem, leaf, flower, and fruit characteristics;
(4) identify structures and equipment used in producing greenhouse, ornamental, and nursery plants;
(5) determine location, size, environment, and arrangement of a greenhouse;
(6) water and feed greenhouse plants;
(7) select and identify propagation media, nursery soils, compost, mulches, soil, mixture, fertilizers, and other growth materials;
(8) perform soil sterilization;
(9) understand and perform the methods of propagating plants;
(10) understand selection, breeding, and reproduction of plants;
(11) grow greenhouse plants;
(12) grown nursery stock and ornamentals in containers;
(13) develop and maintain landscape and turfgrasses;
(14) identify and control diseases, insects, organisms, and weeds;
(15) determine floral design accessories, arranging, and judging;
(16) calculate production costs;
(17) understand marketing, financial control, credit records, accounts, labeling, pricing, displaying, and advertising;
(18) select, operate, and maintain horticultural tools and equipment; and
(19) understand and perform home production of commercial vegetables, fruits, and nuts.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630255 THROUGH #11630264 - HORTICULTURAL OCCUPATIONS

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Classify and Identify Horticultural Plants** | | |
| 1. Explain the Advantages of Naming Plants Scientifically | (1) | 0104,8927-A |
| 2. Identify Plant Characteristics Used to Classify and Name Plants | (1,3) | 0104,8927-A |
| 3. Use Plant Characteristics to Identify Plants | (1,3) | 0104,8927-A |
| 4. Classify and Identify Greenhouse and Nursery Crops | (1,2) | 4332,8927-B |
| **B. Identify Structures and Equipment Used in the Production of Horticultural Crops** | | |
| 1. Recognize Considerations for Locating and Building a Greenhouse or Nursery | (4,5) | 8933-A |
| 2. Select Structures Used in the Production of Horticultural Crops | (4) | 8933-B |
| 3. Select Equipment Required for Controlling the Environmental Conditions of Horticultural Crops | (4) | 8933-C,Reference #1 |
| 4. Select Containers for Horticultural Crops | (4) | 8933-D |
| **C. Select and Prepare Soils and Media for the Production of Horticultural Crops** | | |
| 1. Identify the Components and Properties of Soil | (7) | 8382 |
| 2. Identify the Components and Properties of Soilless Media | (7) | 8931-A |
| 3. Mix Soilless Growing Media Using Selected Components | (7) | 8931-A |
| 4. Prepare Mulches and Compost | (7) | 8931-B |
| 5. Sterilize Soils and Soilless Media | (8) | 8931-C |
| **D. Recognize Plant Propagation Techniques Related to Horticultural Plant Production** | | |
| 1. Identify Vegetative Plant Structures and Their Functions | (9) | 8930-A |
| 2. Identify Reproductive Plant Structures and Their Functions | (9) | 8930-B |
| 3. Germinate Seeds | (9) | 8930-C |
| 4. Propagate Plants Asexually | (9) | 8930-D,Reference #2 |

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AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630255 THROUGH #11630264 - HORTICULTURAL OCCUPATIONS

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Understand Plant Selection and Breeding** | | |
| 1. Discuss Plant Genetics | (10) | 8387 |
| 2. Explain the Aspects of Plant Breeding | (10) | 8389 |
| 3. Describe Plant Hybridization and the Preservation of Pure Lines | (10) | 8858-B |
| 4. Select Quality Seed | (10) | 8512,8859-A |
| **F. Grow Greenhouse and Nursery Crops** | | |
| 1. Select and Grow Greenhouse Crops | (11) | 8931-D |
| 2. Select and Grow Nursery Crops | (12) | 8931-E |
| 3. Fertilize Greenhouse and Nursery Crops | (6,7,11,12) | 8931-F |
| 4. Water Greenhouse and Nursery Crops | (6,11,12) | 8931-G |
| 5. Identify and Control Pests of Greenhouse and Nursery Crops | (11,12,14) | 8931-H,8968-C |
| 6. Schedule Greenhouse Potted Crops and Nursery Container Crops | (11,12) | 8932-A,Reference #3 |
| 7. Identify Plant Growth Regulators | (11) | 8268-A |
| 8. Grade Nursery Plants | (12) | 8913-B,Reference #4 |
| **G. Explain Environmental Requirements for the Production of Horticultural Crops** | | |
| 1. Describe the Fundamental Principles of the Environment | (5,11,12) | 8934-A,Reference #5 |
| 2. Control the Temperature Surrounding Horticultural Crops | (5,11,12) | 8934-A |
| 3. Control the Humidity Surrounding Horticultural Crops | (5,11,12) | 8934-A |
| 4. Explain the Properties of Light that Affect Plant Growth | (5,11,12) | 8934-B |
| 5. Supply Supplemental Lighting to Horticultural Crops | (5,11,12) | 8934-B |
| 6. Provide Shade for Horticultural Crops | (5,11,12) | 8934-B |

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| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **H. Design, Install, and Maintain Landscapes** | | |
| 1. Explain the Landscape Design Process | (13) | 8911-A |
| 2. Assess a Client's Landscaping Needs and Desires | (13) | 8911-B |
| 3. Analyze a Landscape Site to Facilitate Design | (13) | 8911-C |
| 4. Select Drawing Equipment for Landscape Design | (13) | 8912-A |
| 5. Explain the Elements and Principles of Landscape Design | (13) | 8912-B |
| 6. Develop the Preliminary Design | (13) | 8912-D |
| 7. Design Landscape Use Areas | (13) | 8912-E,Reference #6 |
| 8. Incorporate Symbols and Lettering into the Final Design | (13) | 8912-F |
| 9. Evaluate Service Contracts Related to Landscape Design | (13) | 8915-A |
| 10. Prepare the Landscape Site | (13) | 4324,8918-A |
| 11. Install Plants in the Landscape | (13) | 8918-B |
| 12. Water Landscape Plants | (13) | 8919-A,Reference #7 |
| 13. Prune Landscape Plants | (13) | 8919-B |
| 14. Schedule Landscape Maintenance | (13) | 8920-A |
| **I. Establish and Care for Turfgrasses** | | |
| 1. Select and Install Turfgrasses | (13) | 8918-C |
| 2. Maintain the Health and Vigor of Turfgrasses | (13) | 8270-A,Reference #8 |
| 3. Properly Mow Turfgrasses | (13) | 8919-C |
| **J. Perform Floral Designs** | | |
| 1. Identify Flowers and Foliage Used in Floral Design | (15) | 4329,8943-A |
| 2. Explain the Elements and Principles of Floral Design | (15) | 4327,8946-A,8946-B |
| 3. Select Materials and Review Design Mechanics for Arranging Fresh Cut, Silk, and Dried Flowers | (15) | 8947-A,8948-A |
| 4. Prepare Symmetrical Arrangements with Fresh Cut Flowers | (15) | 8947-B |
| 5. Prepare Asymmetrical Arrangements with Fresh Cut Flowers | (15) | 8947-C |
| 6. Prepare Round Arrangements with Fresh Cut Flowers | (15) | 8947-D |

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **J. Perform Floral Designs - Continued** | | |
| 7. Prepare Three-Dimensional Arrangements with Silk Flowers and Dry Flowers | (15) | 8948-C |
| 8. Prepare Corsages and Boutonnieres | (15) | 8949-A,8949-B,8949-C 8949-D,8949-E |
| 9. Prepare Floral Arrangements for Holidays, Banquets, and Other Special Occasions | (15) | 8950-A |
| **K. Understand Greenhouse and Nursery Business Management** | | |
| 1. Develop Recordkeeping Techniques for Managing a Horticulture Business | (17) | 8272-A,Reference #9 |
| 2. Develop Employee Management Techniques | (17) | 8272-B |
| 3. Calculate Production Costs | (16,17) | 8272-C |
| 4. Market Greenhouse and Nursery Crops | (17) | 8272-D |
| 5. Transport Greenhouse and Nursery Crops | (17) | 8272-E |
| 6. Establish Favorable Relations with Customers | (17) | 8272-F |
| **L. Select, Operate, and Maintain Horticultural Tools and Equipment** | | |
| 1. Identify, Maintain, and Store Hand Tools, Small Power Tools, and Large Equipment | (18) | 8929-A |
| 2. Maintain Structures and Equipment Used in Horticultural Crop Production | (18) | 8933-E |
| 3. Apply Safe Work Practices to Horticulture | (18) | 8928-A |
| **M. Produce Fruits, Nuts, and Vegetables** | | |
| 1. Identify and Select Cultivars of Fruits, Nuts, and Vegetables | (19) | 4326,4331,8964-A,8964-B 8964-C,References #10-#14 |
| 2. Plant Cultivars of Fruits, Nuts, and Vegetables | (19) | 8860-A,8971-A |
| 3. Prune Fruit and Nut Crops | (19) | 8972-A,8972-B |

REFERENCES

Reference #1 - Form C29X "Controlled Environment Equipment for Greenhouses." Acme Engineering and Manufacturing Corporation. Muskogee, Oklahoma.

Reference #2 - Text Hartman, Hudson T., Dale E. Kester, and Frederick T. Davies, Jr. Plant Propagation: Principles and Practices. Current Edition. Prentice-Hall, Inc.: Englewood Cliffs, New Jersey.

Reference #3 - Text Ball, Vic. Editor. Ball Red Book. Current Edition. Reston Publishing Company, Inc.: Reston, Virginia.

Reference #4 - ANSI Z60.1 "American Standard For Nursery Stock." (1986). American Association of Nurserymen: Washington, D.C.

Reference #5 - Form C7S "The Greenhouse Climate Control Handbook." Acme Engineering and Manufacturing Corporation. Muskogee, Oklahoma.

Reference #6 - B-1489 "Landscape Gardening." Texas Agricultural Extension Service.

Reference #7 - B-1584 "Landscape Water Conservation...Xeriscape." Texas Agricultural Extension Service.

Reference #8 - L-1372 "Lawn Care." Texas Agricultural Extension Service.

Reference #9 - L-1221 "Entering the Nursery or Greenhouse Business." Texas Agricultural Extension Service.

Reference #10 - L-1205 "Planning Guide for Your Home Garden." Texas Agricultural Extension Service.

Reference #11 - L-1581 "Home Fruit Production -- Stone Fruit, Peaches, Nectarines, Plums, Apricots, and Almonds." Texas Agricultural Extension Service.

Reference #12 - L-1591 "Home Fruit Production -- Figs." Texas Agricultural Extension Service.

Reference #13 - L-1598 "Home Fruit Production -- Pears." Texas Agricultural Extension Service.

Reference #14 - L-1607 "Home Fruit Production -- Apples." Texas Agricultural Extension Service.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630267 - WILDLIFE CONSERVATION EMPLOYEE

Training as a Wildlife Conservation Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved wildlife conservation training station. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the wildlife conservation employee curriculum guide recommend selected references available through the Instructional Materials Service, the Texas Agricultural Experiment Station, Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of a wildlife conservationist;
(2) exercise safety practices;
(3) understand game and fish laws;
(4) identify local non-game animals;
(5) identify fur-bearing animals;
(6) develop an understanding of game management practices in local community;
(7) develop an understanding of game bird management in local community;
(8) relate waterfowl management to local community;
(9) classify fish and develop management practices;
(10) understand fish pond management practices;
(11) recognize the importance of commercially growing and raising fish;
(12) understand shrimp, coastal, and shellfish production;
(13) identify snakes of known importance in wildlife community;
(14) diagnose and use first aid treatment on snake bites;
(15) understand water safety; and
(16) understand pollution types, effects, prevention, and control measures.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630267 - WILDLIFE CONSERVATION EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Discuss the Importance of Wildlife Conservation** | | |
| 1. Benefits of Wildlife | (1) | 8981-A |
| 2. History of Wildlife Management | (1) | 8982-A |
| **B. Identify Laws Affecting Wildlife and Conservation** | | |
| 1. State and Federal Agencies in Wildlife Conservation | (3) | 8983-A |
| 2. Federal Wildlife Laws | (3) | 8983-B |
| 3. Texas Wildlife Laws | (3) | 8983-C |
| 4. Policies Affecting Wildlife | (3) | 8983-E |
| 5. Hunting Leases | (3) | 8983-D |
| **C. Discuss the Importance of Game Management Practices** | | |
| 1. The Ecosystem | (6) | 8984-A |
| 2. Wildlife Habitat Requirements | (6) | 8986-A |
| 3. General Concerns in Wildlife Population Management | (6) | 0273,8986-B |
| 4. General Management Practices for Selected Wildlife Populations: Deer, Turkey, Quail, and Freshwater Fish | (6) | 0271<br>9184,9640,9650<br>8986-C,9631,9643 |
| 5. Using Genetics to Improve Wildlife | (6) | 8987 |
| 6. Handling Misplaced Wildlife | (6) | 8987-D |
| **D. Discuss Game and Fish Enterprise Opportunities** | | |
| 1. Commercial Game and Non-Game Enterprises | (10,11,12) | 8987-C,9712,9713,9714<br>9715,9716,9717,9718,9719 |
| 2. Commercial Fish Enterprises | (10,11,12) | 0283,8987-C,9680<br>9681,9682,9742,9743 |
| 3. Classes and Qualities of Seafood | (10,11,12) | 0274,0282,8660-A,8660-C |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630267 - WILDLIFE CONSERVATION EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **E. Identify Wildlife and Fish Species** | | |
| 1. Game and Fur Bearer Animal Species Identification | (4,5) | 0269,0286,5701,8985-A |
| 2. Predator, Pests, and Nuisance Species Identification | (4,5) | 0269,0286,8985-B |
| 3. Identification of Freshwater Fish Species | (9) | 5703,8985-C |
| 4. Saltwater Fish Species Identification | (9) | 0275,5703,8985-D |
| 5. Waterfowl Identification | (7) | 5704,8985-E,9639 |
| 6. Land Bird Identification | (7) | 5705,8985-F,9639 |
| 7. Exotic Wildlife Species Identification | (4,5,7,8,9,13) | 0269,0286,8985-G |
| 8. Reptile Species Identification | (13) | 0284,0285,5985-H |
| 9. Endangered Species Identification | (4,5,7,8,9,13) | 0269,0286,8987-A |
| **F. Discuss the Impact of Pollution on the Environment** | | |
| 1. Air Quality Standards and Agricultural Policies | (16) | 8694-A |
| 2. Sources, Effects, and Control of Air and Noise Pollution | (16) | 8694-B |
| 3. Land Use Impact and Water Quality | (16) | 8690-B |
| 4. Hazardous Materials and Toxicity | (16) | 8696-C |
| 5. Agricultural Waste Management | (16) | 8692-C |
| **G. Practice Recreational Safety** | | |
| 1. Hunter Safety | (2) | 9621,9622,9623,9624 9669,Reference #1 |
| 2. Boating Safety | (15) | Reference #2 |
| 3. Outdoor First Aid | (14) | Resource #1 |

## REFERENCES

Reference #1 — Texas Hunter Education Manual. (Latest Edition.) Texas Parks and Wildlife Department: Austin, Texas.

Reference #2 — Texas Boating Basics - A Course in Better Boating. (Latest Edition.) Texas Parks and Wildlife Department: Austin, Texas.

Reference #3 — Contact a community Emergency Medical Technician, nurse, or doctor.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630279 - FARM AND RANCH ELECTRIFICATION EMPLOYEE

Training as a Farm and Ranch Electrification Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved farm and ranch electricity company. This course is designed as a one or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the farm and ranch electrification employee curriculum guide recommend selected references available through the Instructional Materials Service and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of electricity to the farm or ranch;
(2) practice safety precautions when working with electricity;
(3) develop a knowledge of basic electrical circuits;
(4) draw wiring diagrams;
(5) measure current, voltage, and resistance using testing tools and equipment required;
(6) understand the importance of conductors and semiconductors;
(7) perform general electrical maintenance;
(8) develop a knowledge of battery systems, electrical motors, charging systems, ignition systems and lighting and accessory circuits;
(9) perform basic wiring skills; and
(10) maintain a clean electrical shop and equipment.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630279 - FARM AND RANCH ELECTRIFICATION EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Importance of Safe Electrical Work on the Farm or Ranch** | | |
| 1. Identify Major Areas of Agricultural Mechanics | (1) | 8220-A,8410 |
| 2. Agricultural Mechanics: Importance, Safety, and Lab Management | (2,10) | 8600 |
| **B. Application and Use of Hand and Power Tools and Equipment Used by Farm and Ranch Electrification Employee** | | |
| 1. Safe Use of Hand and Power Tools and Equipment | (2,5,10) | 8108,8412,8414,8601-A,8601-B |
| **C. Principles and Concepts of Electrical Circuits** | | |
| 1. Basic Principles and Terms of Electricity and Electromagnetic Induction | (2,3) | 8231-A,8602-A |
| 2. Determine Electrical Needs and Plan Electrical Circuits with Use of Local and National Electrical Codes | (2,3,4) | 8211-A,8231-B,8602-B |
| 3. Selection of Wiring Materials and Supplies | (6,7,9) | 8231-B,8602-B,8619 |
| 4. Installation, Maintenance, and Repair of Electrical Circuits and Controls | (5,7,9) | 8231-C,8232-A,8619 |
| **D. Operation, Selection, and Maintenance of Electric Motors** | | |
| 1. Operation and Selection of Electric Motors and Motor Drives | (8) | 8795 |
| 2. Maintenance and Troubleshooting of Electric Motors | (5,8,9) | 8232-A,8795 |
| 3. Operation and Installation of Electric Motor Protection and Control Devices | (5,6,7,8,9) | 8231-A,8232-A,8795 |
| **E. Operation, Maintenance, and Repair of 12 Volt DC Electrical Circuits** | | |
| 1. Operation, Maintenance, and Repair of Charging, Starting, Ignition, and Accessory Systems | (8) | 8209-A,8209-B,8209-C,8209-D |
| 2. Operation, Maintenance, and Repair of Electronics Monitoring, Warning, and Control Circuits | (5,6,8) | 8211-A,8231-A |

ADDITIONAL REFERENCES AND MATERIALS

Texts/Handbooks:

(IMS# 4512) Fundamentals of Service - Electrical Systems. Deere and Co., Moline, IL.
(IMS# 4545) Understanding Electricity and Electrical Terms. AAVIM, Athens, GA.
(IMS# 4546) Agricultural Wiring Handbook. National Food and Energy Council, Columbia, MO.
(IMS# 4547) Maintaining the Lighting and Wiring Systems. AAVIM, Athens, GA.
(IMS# 4548) Farm Electrical Lesson Plans - Wiring and Safety.
(IMS# 4549) Electrical Controls and Basic Control Circuits Used in Agricultural Production.
(IMS# 4556) Electrical Motors - Selection, Protection, and Drives. AAVIM, Athens, GA.
(IMS# 4610) Electrical Wiring - Residential/Utility Buildings/Service Areas. AAVIM, Athens, GA.
(IMS# 4629) Cooper, Ag Mechanics - Fundamentals and Applications. (2nd Edition), Delmar Inc., Albany, NY.

The National Electrical Code Handbook. (Latest Print), National Fire Protection Association, Quincy, MA.

Videos:

(IMS# 9570) "Electrical"
(IMS# 9778) "Electrical Safety in the Home or Shop"

Software:

(IMS# 9113) "Electrical Wiring and Principles Review," 9226 (TRS), 9239 (IBM)
(IMS# 9175) "Electrical Systems" (Apple II)
(IMS# 9219) "Electrical Motors and Related Review" (Apple II)

"Computerized Instructional Wiring Program," (IBM with notebook and references.) National Food and Energy Council, Columbia, MO.

## AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
## ACT #11630282 - POULTRY PROCESSING PLANT EMPLOYEE

Training as a Poultry Processing Plant Employee is provided for students in grades 11-12 in Texas public secondary schools through Agricultural Cooperative Training. It is a specific course designed to supplement on-the-job training at an approved poultry processing plant training station. This course is designed as a one-year or two-year program with 60 percent individualized study and 40 percent group instruction. Units and topics covered in the poultry processing plant employee curriculum guide recommend selected references available through Instructional Materials Service, the Texas Agricultural Extension Service, and other agencies. The primary purpose of this guide is to assist the teacher in developing an individualized course of study that will meet the essential elements of this course. The essential elements and the units and topics for group instruction are located at the beginning of this curriculum guide.

### ESSENTIAL ELEMENTS

(1) recognize the importance of the poultry processing industry;
(2) understand inspection and grading standards;
(3) exercise safety practices;
(4) operate and maintain equipment used in processing;
(5) perform proper sanitation and health practices;
(6) identify efficient methods of distributing poultry products;
(7) understand the utilization of poultry processing by-products;
(8) recognize the steps in processing poultry;
(9) equate the value of plant operation economics; and
(10) control pests.

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630282 - POULTRY PROCESSING PLANT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **A. Identify Factors in Safe Operation, Maintenance, and Sanitation of Slaughter and Processing Facilities and Equipment** | | |
| 1. Sanitation in the Poultry Processing Industry | (5,10) | 0414,0418,8655-A & C<br>A-1 References |
| 2. Operation and Maintenance of Poultry Processing Equipment | (4,8,9) | 4500 & 4600 Series |
| 3. Safety in the Poultry Processing Industry | (3,9) | 5901,8694-A,8696-A & B<br>A-3 References |
| 4. Pest Management Practices | (10) | 0418,8655-B,8822-C & E<br>A-4 References |
| **B. Identify Poultry Meats** | | |
| 1. Wholesale and Retail Poultry Meats | (1,9) | 0414,0418,5037,8659-B |
| 2. Poultry Meat By-Products | (1,7,9) | 0414,0418,8662 |
| 3. Value-Added Poultry Meat Products | (1,9) | 0414,0418,5121,5140<br>8659-B |
| 4. Classes and Qualities of Poultry Meat | (1,9) | 0414,0418 |
| **C. Recognize Procedures Involved in Marketing Poultry Meat** | | |
| 1. Pricing, Labeling, and Displaying Poultry Meat | (6,7,8,9) | 0414,8661-B<br>C-1 References |
| 2. Trends in Supply and Demand of Poultry Meat | (6,7,9) | 8409,8642-B,8653-B<br>C-2 References |
| 3. Convenience Foods and Consumer Preference | (6,7,9) | 8667-D<br>C-3 References |
| 4. Poultry Meat Markets | (6,7,9) | 8714-A thru G<br>C-4 References |

AGRIBUSINESS 501 - AGRICULTURAL COOPERATIVE TRAINING
ACT #11630282 - POULTRY PROCESSING PLANT EMPLOYEE

| UNITS AND TOPICS OF INSTRUCTION | ESSENTIAL ELEMENTS | SELECTED REFERENCES |
|---|---|---|
| **D. Analyze Poultry Meat Grading and Inspection** | | |
| 1. Inspection Standards for the Poultry Meat Industry | (2,6,8,9) | 0414 |
| 2. USDA Inspection of Poultry Meat | (2,6,8,9) | 0414 |
| 3. Evaluating and Grading Carcasses and Carcass Parts | (2,6,8,9) | 0413,0414<br>0418,4001,4030<br>5036B,5120,5137<br>5138,5138A,8644-B |
| **E. Recognize Nutritive Value of Poultry Meat** | | |
| 1. Nutritive Value of Poultry Meat | (1,6,9) | 8654,E-1 References |
| 2. Uses of Poultry Meat | (1,6,9) | 0414 |
| 3. Cooking and Other Preparation Qualities of Poultry Meat | (1,6,9) | E-3 References |
| 4. Poultry Meat Palatability | (1,6,9) | 0414 |
| **F. Evaluate the Processes of Merchandising Poultry Meat** | | |
| 1. Live Bird Evaluation and Grading | (6,8,9) | 0413,0414<br>0418,4001,4030 |
| 2. Purchases and Sales of Live Poultry | (6,8,9) | 4776,8667-C |
| 3. Purchases and Sales of Processed Poultry Meat | (6,8,9) | 4776,8667-C<br>F-3 References |
| 4. Shipping and Receiving Poultry Meat | (6,8,9) | 8667-C |
| **G. Describe Methods of Preserving and Storing Poultry Meat** | | |
| 1. Preserving Poultry Meat | (6,8,9) | 8661-A,G-1 References |
| 2. Packaging and Labeling Poultry Meat | (6,8,9) | 0414,8661-B<br>G-2 References |
| 3. Refrigerating and Freezing Poultry Meat | (6,8,9) | 8661-C,G-3 References |
| **H. Identify the Methods of Fabricating Poultry Meat** | | |
| 1. The Poultry Slaughtering Process | (8,9) | 5035,8658,8659-A<br>H-1 References |
| 2. Poultry Carcass Evaluation | (8,9) | 0414,0418,4001,4030<br>5120,5138A,8644-B |

## ADDITIONAL REFERENCES

Suggested Textbooks for this occupational area include but are not limited to:

Barrick, R.K. & Hobart L. Harmon. Animal Production and Management, McGraw-Hill Book Company: Dallas, TX.
Donahue, Roy L. & James E. Christiansen. Exploring Agriculture: An Introduction to Food and Agriculture, Prentice-Hall, Inc.: Englewood Cliffs, NJ.
Ensminger, M.E. Animal Science Digest, Interstate Printers & Publishers, Inc.: Danville, IL.
Ensminger, M.E. & C.G. Olentine, Jr. Feeds & Nutrition - Abridged, The Ensminger Publishing Company: Clovis, CA.
Gillespie, James R. Modern Livestock & Poultry Production, Delmar Publishers Inc: USA.
Hoover, N.K. Handbook of Agricultural Occupations, Interstate Printers & Publishers, Inc.: Danville, IL.
Kingston, Mike (Editor). Texas Almanac, (reference to sections in agriculture and statistical data), A.H. Belo Corporation: Dallas, TX. (available by purchase from Gulf Publishing Company, P.O. Box 2608, Houston, Texas 77252; Phone AC 713/520-4444).
Luening, R.A. et al. The Farm Management Handbook, Interstate Printers & Publishers, Inc.: Danville, IL.
Richardson, W.B. et al. Managing the Farm and Ranch, Reston Publishing Company, Inc.: Reston, VA.
Roy, E.P. Exploring Agribusiness, Interstate Printers & Publishers, Inc.: Danville, IL.
Smith, D.T. (Editor). 1989 Yearbook of Agriculture: Farm Management - How to Achieve Your Farm Business Goals, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).
Smith, D.T. (Editor). 1990 Yearbook of Agriculture: Americans in Agriculture - Portraits of Diversity, U.S. Department of Agriculture, USGPO: Washington, DC. (available through your local congressional leader).

A-1 References:
L-1449, "Odor Regulation by Nuisance Laws," TAEX
MP-1012, "Resources Available to Stop Pollution," TAEX

A-3 References:
L-0427, "! Cuidado con los Venenos ! (Safety First with Insecticides)," TAEX
L-1026, "Use Pesticides Safely," TAEX
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